

**APPENDIX A:
SHPD APPROVAL LETTERS**



DEPUTIES

JOHN P. KEFFELER II
DONA L. HANAKE

AQUACULTURE DEVELOPMENT
PROGRAM

AQUATIC RESOURCES
CONSERVATION AND

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CONVEYANCES

FORESTRY AND WILDLIFE
HISTORIC PRESERVATION

DIVISION
LAND MANAGEMENT

STATE PARKS
WATER AND LAND DEVELOPMENT

ARI 89-596/89-738
Project 91 1152

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

C: ATW

February 17, 1993

Virginia Goldstein, Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

LOG NO: 6839
DOC NO: 9302RC34

Dear Ms. Goldstein:

SUBJECT: County of Hawaii Change of Zone -- QLT Lands
Keahuolu, North Kona, Hawaii
TMK: 7-4-8: portion 2, 12

We have reviewed the archaeological inventory survey for these lands and have found the survey to be acceptable. We are currently reviewing the detailed mitigation plan for the lands, and we will be meeting with the consulting archaeological firm (PHRI) next week to finalize the research design for the data recovery plan.

At this point, we believe that the project will have "no adverse effect" on significant historic sites, if a condition -- worded similar to the following -- is attached to ensure that the work is adequately carried out. This condition is similar to that we requested for the State Land Use Commission petition for this project.

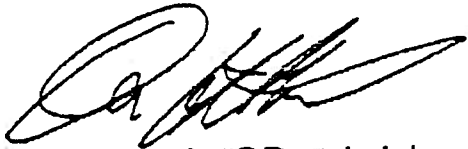
The applicant has committed to preserving some significant historic sites in the project area and to archaeological data recovery of the other sites which are significant solely for their information content. The applicant shall prepare a detailed historic preservation mitigation plan to treat these sites. This plan shall consist of a detailed archaeological data recovery plan (scope of work with research design) and a detailed preservation plan. The mitigation plan must be approved by the County Planning Department and the State of Hawaii's Historic Preservation Division prior to its implementation. These same two agencies must verify in writing the successful execution of the plan, prior to land altering activities in the area of the historic sites.

3/11/93

Virginia Goldstein
Page 2

We will advise you on the results of our meeting on February 22, 1993, with PHRI regarding the scope of the detailed mitigation plan.

Sincerely,



DON HIBBARD, Administrator
State Historic Preservation Division

RC:amk

c: OCEA (File 93-270)
Paul Rosendahl, PHRI

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KEITH AITUE, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCE

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STATE HISTORIC PRESERVATION DIVISION
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FORESTRY AND WILDLIFE HISTORIC PRESERVATION DIVISION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

December 21, 1993

Ms. Susan S. Rutka
Belt Collins & Associates
680 Ala Moana Boulevard, First Floor
Honolulu, Hawaii 96813-5406

LOG NO: 10361 ✓
DOC NO: 9312RC02

Dear Ms. Rutka:

SUBJECT: **Mitigation Plan for Significant Historic Sites -- Liliuokalani Trust
Keahuolu Lands
Keahuolu, North Kona, Hawaii
TMK: 7-4-8: portion 2 & 12**

This responds to your letter of November 24, 1993. This package was supplemented on December 9, 1993, with the summary table of significant sites in the project area and their proposed mitigation treatment which you supplied us at our request.

Mitigation Commitments

We have no objection to combining the mitigation plan for the Queen Liliuokalani Trust (QLT) lands mauka and makai of the Queen Ka'ahumanu Highway.

We find it acceptable to switch the Mamalahoa Trail segment which lies makai of the highway from preservation to data recovery. It is an isolated remnant, with a large gap separating it from the rest of the trail, and the rest of the trail is mauka of the highway. Also, Na Ala Hele has stated that they do not wish to preserve it for public access. It must be clear, however, that the portions of this trail mauka of the highway are to be preserved. We should add that losing a small part of the trail mauka of the highway to a turn lane onto the highway is acceptable. Data recovery should be done of that portion (primarily photography and a few measurements). Preservation of the trail will probably need to involve restoration of damaged areas.

We also find it acceptable to move 3 sites in the KIS Expansion Area (18513, 18515, 18518) out of data recovery and into no further work -- the Exhibit E argument of PHRI dated November 23, 1993. We agree that these types of sites (small agricultural and habitation features) will be well represented in the sample blocks.

Susan Rutka

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We also acknowledge that the 8 burial sites are to be preserved as-is, by vote of our Hawai'i Island Burial Council, as noted in our November 29, 1993, letter to Mr. Nakoa.

Thus, at this time, the mitigation commitment is to preserve 23 sites and data recover 19 sites, as indicated on your summary table.

Detailed Archaeological Data Recovery Plan

In a July 28, 1993, letter, we approved the research design of PHRI based on sampling blocks. That letter details the nature of the research design. The focus is to study similarities and differences in agricultural fields and in types of habitations, to see if there are notable spatial patterns, and to date the growth of the agricultural system.

We understand that this data recovery work is not planned to start right away, so the sites will technically be in the preservation form of mitigation for a period of time. Interim protection measures must be agreed upon prior to the soon to occur construction. We agree that only a few sites will be threatened by construction (those in the preserve, the trail, 18506 and 18511 in the KIS Expansion area, and Data Recovery Block C and sites 133913340 in Phase 1). We also agree that these should be fenced as you propose, with the buffer zones and fence locations shown in Exhibit C being acceptable. Construction firms must be briefed as to the presence of these sites, and the fact that substantial fines and seizure of equipment can result from their damage.

Based on discussions in our December 9, 1993, meeting, all data recovery work would occur in the makai areas (KIS Expansion Area & Phase 3) and in Phase 1 within 5 years, with a final report prepared -- by January 1, 1999. (As this date is approached, an extension could be requested if no development is occurring in the areas and the sites do not seem threatened. A request letter with justification should be submitted for our review at that time.) At the completion of the data recovery report, the data recovery plan would then be re-evaluated by our Division for the sites in the remaining mauka Phase 2 area. If adjustments to the plan are needed, these will then be agreeably worked out by the Trust, our Division, and the County Planning Department. For example, research methods may not be successful in answering some research questions, so some approaches may be dropped in the final phase of the data recovery. Then within 5 additional years these Phase 2 mauka lands would have to have their data recovery work concluded. It must be clear that all data recovery work must be verified to have been successfully executed by our Division and by the County Planning Department.

Detailed Preservation Plan

The sites to be preserved include the 8 isolated burials, the Mamalahoa Trail mauka of the highway, and the sites within the historic preserve. We understand that you wish to defer

Susan Rutka
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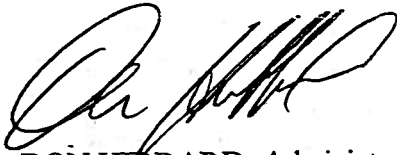
development and execution of this plan. This would again mean that interim protection measures are needed as well as the development and execution of a long-range preservation plan.

The first step of interim preservation measures is to fix buffer zones around these sites. We understand that our Hawai'i Island Burial Council has recommended a 30 foot buffer zone around each burial site; we find this to be acceptable. Buffer zones around the preserve as shown in Exhibit C are acceptable. The buffers for the Mamalahoa Trail on the mauka side of the highway will temporarily be 50 feet out from the center line on each side of the trail, with the final buffer to be specified in the detailed preservation plan discussed in the next paragraph. Barrier fences need to be erected across the end of the trail to be cut by the turn lane from Makalapua Blvd., along the west and south edges of the preserve, and around burial site 18511 -- as these sites will be subject to possible construction damage. Construction firms must be briefed as to the presence of these sites, and the fact that substantial fines and seizure of equipment can result from their damage.

Based on discussions in our meeting of December 9, 1993, within one year (by January 1, 1995), an acceptable detailed long-range preservation plan shall be completed for the preserve and the other sites. This plan will include a schedule for execution of the plan's tasks. Again, our Division and the County Planning Department must approve the plan and eventually verify its successful execution.

In summary, this letter shall constitute the acceptance of the mitigation commitments for the significant sites, the acceptance of the interim protection measures, the acceptance of the data recovery plan and its scheduled implementation, and the acceptance of a schedule for preparation of the long-term preservation plan. If the County is in agreement, we believe that with the implementation of the protection measures, construction in Increment A-1 and related off-site infrastructure could begin.

Sincerely yours,



DON HIBBARD, Administrator
State Historic Preservation Division

RC:amk

c: Virginia Goldstein, Planning Dept., County of Hawaii
Alan Walker, PHRI

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BELT COLLINS & ASSOCIATES

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
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WATER AND LAND DEVELOPMENT

July 28, 1993

Ms. Susan Rutka
Belt, Collins & Associates
680 Ala Moana Boulevard, First Floor
Honolulu, Hawaii 96813-5406

LOG NO: 8976
DOC NO: 9307RC40

Dear Ms. Rutka:

**SUBJECT: Historic Preservation Mitigation Plan for
Queen Liliuokalani Trust Lands
Keahuolu, North Kona, Hawaii
TMK: 7-4-8: portion 2, 12**

This responds to your letter of July 19, 1993. We did receive PHRI's June 10, 1993, addendum to their mitigation plan of March 1992 (Jensen, Donham & Rosendahl 1992. Archaeological Mitigation Program, Queen Liliuokalani Trust Property. PHRI ms. 1152-012192.) -- this addendum being prepared to met concerns stated in our letter of March 5, 1993 to Dr. Rosendahl. The survey had found 155 significant historic sites and also numerous agricultural features which covered the landscape. The mitigation commitment was to preserve 32 of these sites and to archaeological data recover 123 of the sites.

We find that the addendum to the mitigation plan acceptably identifies 6 sampling blocks for studying the agricultural features and associated sites and identifies 23 other sites outside the blocks for data recovery work. This sample is acceptable to cover data recovery work for the project area. The key research aim of this work is to study the agricultural features and associated temporary habitations in this area in a slightly different approach, to lead to a better understanding of the historic sites in this region. The research is to focus on establishing similarities and differences in agricultural fields and in types of habitations, to see if there are notable spatial patterns, and to date the growth of the agricultural system. The intent of the sample blocks is to conduct a series of micro-study samples. Tasks will involve:

1. Mapping all agricultural features and all sites within each block and associated localized topography (depressions, bare ridges, soil areas, etc.). For each block, an overall map must be prepared showing these items.

2. Within each block, horizontal excavation of 50% or more of each habitation structure that has deposits, to try to identify activity areas and determine if there were different types of temporary habitations in use.
3. Within each block, surface collection in a 20 meter radius around all habitation structures with surface artifacts and/or food remains -- again to establish functional interpretations and identify differences.
4. Within each block, take soil samples from agricultural and habitation features and process pollen analyses -- to attempt to identify local flora, cultivated plants and collected species and to determine what similarities and differences existed.
5. From all blocks, submit 50-100 charcoal samples from agricultural and habitation features -- to identify species and reconstruct associated cultivated and collected plants and to determine if differences exist between the types of sites.
6. From all blocks, submit a large number of radiocarbon samples, 30-50.
7. Prior studies of relic botanical species shall be used in the final report's botanical analyses, along with the pollen studies and charcoal species identification.
8. In the final report's analyses, specific block patterns must be analyzed first and then comparisons be made between the blocks. It needs to be emphasized that the analyses are expected to be thorough and detailed and probably lengthy, given the research questions and the approaches used. It is expected that formal types of agricultural and habitation features will be identified and that functional analysis of these types will rely on locational information, pollen studies, charcoal species studies, relic botanical species, surface collection of artifacts and food remains, and excavated artifacts, food remains and features. Chronology must be looked at in part through extensive radiocarbon dating.

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Before we can approve the mitigation plan, however, several things are needed. (First) your letter indicates that 450 acres of the project area has been sold. We need to know which of the sites and study blocks remain in the QLT project area. We and the County Planning Department can then amend the data recovery and preservation commitments for this project. If a map of the sites, showing the study blocks, could be marked with the current QLT border and be sent to us, this also would help. Also, we need to know how many burials or probable burials remain in the project area. (Second), the proposed mitigation treatment (preservation in-place or disinterment/reinterment) for the burial sites must be approved by our Hawaii Island Burial Council before we can approve the detailed mitigation plan, as noted in Condition D. Please contact Edward Ayau of our Burial Programs staff (587-0010) for information on how to be placed on the agenda.

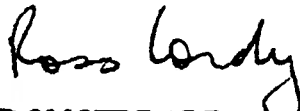
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You also had asked if we could agree that the development of Increment A-1 (which evidently includes roads Queen Liliuokalani Blvd. and Keohokalole St.) would have no effect on significant historic sites. Usually, all mitigation work for a project needs to be completed, before land altering construction would occur. It is not that common to have a request to parcel the project. In this case, you note that surveyors established that A-1 avoided significant historic sites and sampling blocks. We need to see the historic site and sample block locations on a map which also

shows A-1 and its roads to be able to verify this point. You could overlay A-1 and the roads on PHRI's survey map. If all sites and blocks were missed, then we can consider the request. Clearly, there would have to be an acceptable interim protection plan (if some sites are nearby and might be impacted by construction). Also, we would need to know what a schedule for completion of the remaining data recovery and preservation work might be, and to receive some ideas on interim protection for the entire project area if the completion of the remaining mitigation work will not occur for several years (as indicated by your letter). With those items, we could consider this request.

If you have any questions, please feel free to contact Ross Cordy (587-0012), our Branch Chief for Archaeology.

Sincerely yours,



for DON HIBBARD, Administrator
State Historic Preservation Division

RC:amk

c: Alan Walker, PHRI
Virginia Goldstein, Planning Dept., County of Hawaii

APPENDIX B: CULTURAL IMPACT ASSESSMENT STUDY

by Helen Wong-Smith, M.A., Cultural Resources Specialist

ABSTRACT

This report, prepared at the request of Paul H. Rosendahl, Ph.D., Inc. (PHRI), provides a cultural impact assessment for TMK 3-7-4-21:20, Por. 14, Por. 21) in Keahuolū. The assessment is based on a review of a wide range of written material – archaeological reports, government and other historical records, Hawaiian language sources translated into English, and interviews with long-term residents, including native Hawaiians, familiar with the cultural history and resources of Keauholu. The research took place between August 17 and December 15, 2007 and utilized resources at the Hawai'i State Archives, Edwin H. Mo'okini Library of the University of Hawai'i-Hilo, the Hilo Public Library, online resources, and previous historical and cultural reports and interviews.

INTRODUCTION

Keahuolū has been written in several ways in historic records. In *Place Names of Hawai'i*¹ it is written as "Ke-ahu-o-Lu" and given the interpretive translation of "the heap [cairn] of Lu" without an explanation of who Lu may be. Tangaro translates the name as "Shrine of Lū, a legendary voyager" but does not provide a reference for this translation². The place name has also been written "Ke-`ohu-`olu," which can be translated as "the cool mists." Kaiokekoa, a native Hawaiian resident of the Kekaha region relayed to Kepā Maly in 1994 he recalled his elders pronouncing the place name the second way³.

Keahuolū is located in the *moku o loko* (district) of Kona, this northern section of Kona was divided into two regions, Kona kai `opua (Maly provides the interpretive translations "Kona of the distant horizon clouds above the ocean"⁴) and Kekaha-wai-`ole (the waterless place). Kekaha-wai-`ole-o-nā-Kona spans from Kalaoa ahupua`a (Keāhole Point) to Kealakehe ahupua`a. Keahuolū is located just south of this section, as Keahuolū abuts Kealakehe. Kekaha is described as "a dry, sun-baked land"⁵. Sheltered by the abrupt rise of Hualālai, Kekaha receives very little rain below the 1,000-ft elevation contour. Maly provides the following description of residential movement within Kekaha-wai-`ole-o-nā-Kona during the late 1800s and early 1900s in the Hawaiian Newspaper *Ke Hōkū o Hawai'i*.

"O ia ka wāe ne`e `ana ka lā iā Kona, hele a malo`o ka `āina i ka `ai kupakupa `ia e ka lā, a o nā kānaka, nā li`l o Kona, pūhe`e aku la a noho i kahakai kāhi o ka wai e ola ai nā kānaka. (It was during the season, when the sun moved over

¹ Pukui, Elbert, and Mookini 1974

² Tangarō et al. 2006:19 A search in *Hawaiian Mythology* by Martha Beckwith revealed a voyager by the name of Kaulu but none by the name of Lū

³ Maly IN Wulzen et al. 1996:12

⁴ Maly IN O`Hare 1993:Appendix B1

⁵ Kelly 1972:2

Kona, drying and devouring the land, that the chiefs and people fled from the uplands to dwell along the shore where water could be found to give life to the people⁶.

Hawaiian authority and *kumu hula* Pualani Kanaka'ole Kanahale states: "This clearly communicates that the natives of Kekaha-wai-'ole-o-nā-Kona had great knowledge of their land's cycles and its productive abilities. There were springs and brackish water ponds inland from the shore and the ocean was abundant. They planted in the *ma uka* or upland forest and had sufficient amount of rain for their crop. When the rainy season passed, they camped at the shore, grew sweet potato, and fished. Their basic needs were satisfied⁷."

Kekaha has been streaked with ancient and recent (1801 and 1859) lava flows, which contribute to its desolate appearance. Emerson surveyed the area in the 1880s and his map (Reg. Map 1280) denotes "rough pahoehoe [*pāhoehoe*], little vegetation" within Keahuolū.

Ka'iwi Point is the boundary between Keahuolū and Kealakehe. Kanahale reports "Kaiwi Point houses a mamamo ko'a⁸ [a shrine to increase the catch of *mamo* or sergeant fish *Abudefduf abdominalis*].

Mahaihole is the southern boundary of Keahuolū, some 1.8 km north of Kukailimoku Point – named after the deity of victory in battle. Between Kukailimoku and the Keahuolū boundary is a narrow strip of land belonging to *ahupua'a* of Lanihau reducing Keahuolū shoreline dramatically. Kukailimoku Point and the surrounding sand dunes were used in both pre-contact and early historic periods as burial grounds. An 1883 map depicts graves at Kukailimoku and a larger cluster at Kaliliki Point to the south. The surveyor, Jackson, identified a massive masonry tomb as "Kamehameha's Tomb⁹." A 1930 survey identified graves in Lanihau and Keahuolū as do consequent surveys. Neller¹⁰ reported four locations of exposed human remains at the Lanihau/Keahuolū boundary and historic burials were identified at Pāwai Bay by Neighbor Island Consultants in 1973.

MO`OLELO `AINA: NATIVE TRADITIONS AND HISTORIC ACCOUNTS OF KEAHUOLŪ

Kekāhi Mo`olelo Hawai`i (Selected Hawaiian Traditions)

Legendary references to Keahuolū are few. In his report of a reconnaissance survey of the Old Kona Airport area, now a state park in Keahuolū, Earl Neller erroneously ascribes the O'ahu chief Kualii to Keahuolū:

The area around the old Kona airport may also have some connection with the legendary Hawaiian chief Kualii. He was said to have been born at Kalapawai in Kailua, and defied the oppression of Lono-ikaika during the dedication of the

⁶ Hawaiian orthography will be employed by this author except when directly quoting. For this reason many of the quotations will lack diacritical and other marks as they are presented verbatim.

⁷ Kanahale 2001:4

⁸ Kanahale 2001:10

⁹ Neller 1980:5

¹⁰ Neller 1980:11-13

heiau at Kawaluna. He is associated with Ku-kaili-moku, the god of victory in battle. Perhaps by coincidence, all of these place names are found in the beach park area¹¹.

Neller's reference is Beckwith, who states the Kailua referred to is on O'ahu¹². As Kalapawai is the name of the beach in Kailua, O'ahu, (and memorialized by the Kalapawai Store at the entrance of Kailua Beach Park) it is unlikely Neller's references have anything to do with Kailua on Hawai'i Island. The *heiau* at Kawaluna is located in Waiolani in upper Nu'uuanu Valley¹³.

A legendary reference to Keahuolū is found in *Ka'ao Ho'onuiua Pu'uwai No Ka-Miki* (The Heart Stirring Story of Ka-Miki) translated by Kepā Maly, a legendary account of two supernatural brothers, Ka-Miki and Maka'iole, who traveled around Hawai'i Island in the period when Pili-a-Ka'aiea was chief of Kona, ca. 12th-13th century). It was originally published in serial form between 1914 and 1917 in the Hilo-based Hawaiian language newspaper *Ka Hōkū o Hawai'i* by Hawaiian historians John H. Wise and John Whalley Hermosa Isaac Kihe. Here are excerpts from Maly's translation:

...Within the lands of Keahuolū you saw Hale-pa`u which is also near Ka-pā-wai (The water enclosure). Kapāwai is also known as Makā`eo (Look with anger), and a coconut grove encircled those places. Further on, between the lands of Keahuolū and Kealakehe was the *āhua* (Hillock-plantation mound) of Lae-oniau...¹⁴

...The priest who officiated over rituals of Keahuolū and Kealakehe was named Kalua`ōlapauila. He was the priest of the temple Kalihi, which is also called Kalua`ōlapauila. This temple is in the coastal area¹⁵ along the border of Keahuolū and Kealakehe, near the old road into Kailua....¹⁶

...The district of Keahuolū and divisions of Lanihau (1 and 2) were under the rule of Kapohuku`imaile (kāne) and Papalūlā (wahine), and Papaumauma was their warriors champion. When Papaumauma competed with Ka-Miki at the contest site `Iwa`awa`a (at Kohana-iki), he was defeated. Papumauma was honorable, and he greatly admired the superior skills of Ka-Miki and asked to turn his status and land rights over to Ka-Miki, but Ka-Miki declined...¹⁷

Ka-noenoe (The mist, fogginess) – The mound-hill called Pu`u-o-Kaloa sits upon the plain of Kanoenoe which is associated with both Keahuolū and Kealakeha. The setline of mists upon Pu`u-o-Kaloa was a sign of pending rains; thus the traditional farmers of this area would prepare their fields. This plain was referenced by Pili when he described to Ka-Miki the extent of the lands which Ka-Miki would over see upon marrying the sacred chiefess Paehala of Honokōhau. The inheritance lands included everything from the uplands of Hikuhia above Nāpu`u and the lands of the waterless Kekaha, which spanned from the rocky plain of Kanikū (Keahualono) to the plain of Kanoenoe at Pu`uokaloa¹⁸.

¹¹ Neller 1980:15

¹² Beckwith 1972:395

¹³ Pukui et al. 1974:226

¹⁴ April 2 and 9, 1914

¹⁵ Boundary Commission Testimony places this place at the midpoint of Keahuolū rather than the coast.

¹⁶ April 30, 1914

¹⁷ May 21, 1914

¹⁸ October 25, 1917

Pu`u-okaloa (Mound, or hill of Kaloa) – The narratives of Ka-Miki identify Pu`uokaloa as “*Pu`uokaloa I ka malo o Ka`eha e waiho ala...*” Pu`uokaloa where Ka`eha’s loin cloth (symbolic of the mists) was spread out¹⁹.

Ka Hōkū o Hawai`i published another legendary account provided by J.W.H.I. Kihe entitled “Nā Ho`onanea o ka Manawa, Kekāhi mau wahi pana o Kekaha ma Kona” (A pleasant passing of time, [stories from] some of famous places of Kekaha in Kona). This section describing agricultural practices as related to Pu`uokaloa is translated by Maly:

Pu`u-o-kaloa is a mound-hill site in the lands of Keahuolū – Kealakehe, not far from the shore of Kaiwi and Hi`iakanoholae. During periods of dry weather (*ka lā malo`o*) when planted crops, from the grassy plains to the `āma`auma`u (fern forest zone), and even the ponds (*ki`o wai*) were dry, people would watch this hill for signs of coming rains. When the *lihau* (light dew mists) sat atop the hill of Pu`u-o-kaloa, rains were on the way. Planters of the districts agricultural fields watched for omens at Pu`uokaloa, and it was from keen observation and diligent work that people prospered on the land. If a native of the land was hungry, and came asking for food, the person would be asked:

Ua ka ua I Pu`uokaloa, ihea `oe?
When rains fell at Pu`uokaloa, where were you?

[If the answer was...]

I Kona nei no!
In Kona!

[There would be no sweet potatoes for this person.]

[But if the answer was:]

I Kohala nei no!
In Kohala!

[The person would be given food to eat for they had been away, thus unable to accomplish the planting²⁰.]

Within S.N. Hale`ole's epic *Ka Mo`olelo o Lā`ieikawai* (The Hawaiian Romance of Lā`ieikawai) a short reference to Keahuolū and Lanihau as parents is found in the story of *Hiku and Kawelu*:

The son of Keaaoulu [sic] and Lanihau, who live in Kaumalumalu, Kona, once sends his arrow, called Puane, into the hut of Kawelu, a chiefess of Kona. She falls violently in love with the stranger who follows to seek it, and will not let him depart. He escapes, and she dies of grief for him, her spirit descending to Milu. Hiku, hearing of her death, determines to fetch her thence. He goes out into mid-ocean, lets down a *koali* vine, smears himself with rancid *kukui* oil to cover the

¹⁹ October 25, 1917; Maly 1996:12-13

²⁰ May 19, 1914; 1996:13

smell of a live person, and lowers himself on another vine. Arrived in the lower world, he tempts the spirits to swing on his vines. At last he catches Kawelu, signals to his friends above, and brings her back with him to the upper world. Arrived at the house where the body lies, he crowds the spirit in from the feet up. After some days the spirit gets clear in. Kawelu crows like a rooster and is taken up, warmed, and restored²¹.

Fornander provides a longer version of this tradition providing the father's name as Keahuolū²².

The origin of the place name Ka'iwi on the shoreline on the boundary of Keahuolū and Kealakehe is presented in this excerpt:

Ka'iwi (The bone) is also called Ka-lae-o-ka-iwi (The point of Ka-iwi) and is the name of a shark shaped stone near heiau of Kalua'ōlapauila. The priest Kalua'ōlapauila had two body forms, one human, as the priest, and the other body form as a shark in which he swam along the shore of Kealakehe and Keahuolū, attacking people. The shark form was named Kaiwi, and the point Ka-lae-o-Kaiwi is named after him²³.

Kanahele provides additional insight to this story adding that Ka'iwi and Kalua'ōlapauila are destroyed by "their" grandmother, Kauluhenuihikolo, who teaches her grandchildren to call up the fires of Pele to rid the land of this man-eating shark. "Hi'iakanoholae, known today as Ka Lae Keahuolū, was the boundary direction for the lava flow. The protocol for lava is that a course of flow is given and Hi'iakanoholae is the southern limit of the flow. The flow did exactly what it was asked to do with Kaiwi and the characteristic of a Hi'ikaikaale'i and Hi'ikaikaalemoe flow is seen at Kaiwi Point²⁴."

Figure 1 (at end) provides the location of these and other place names compiled by Lloyd Soehren and presented as *Hawaiian Place Names*²⁵. Soehren assigned their locations from Boundary Commission testimonies, surveyor field books, and a myriad of primary resources.

Keahuolū Described in the Journals and Logs of Historic Visitors (1815 to 1902)

The earliest reference to Kailua concerns Kamehameha's residence there after his unification of the islands:

In 1812, two years after all the islands and finally been united under his rule, Kamehameha returned to Hawai'i island from O'ahu, where he had lived for the past nine years. Kamehameha lived most of his remaining years in Kailua, at his principal residence at Kamakahonu in Lanihau ahupua'a [Lanihau is between Keahuolū and Hienaloli]²⁶.

²¹ Hale'ole 1997:660

²² Fornander 1919 v5:182-184

²³ Maly 1996:14

²⁴ Kanahele 2001:10

²⁵ <http://www.ulukau.org/cgi-bin/hpn?>

²⁶ Kelly 1983:3

The accounts of early visitors at Kailua were, in the main, those of explorers...The *Columbia* came to Kailua Bay five times between 1815 and 1818, and then was sold to Kamehameha for sandalwood. The ship [was] renamed the *Laholile*...

On its first visit to Kailua, in January of 1815, the *Columbia* took on board "hogs, vegetables, rope, and cloth of the country" (Corney 1896:35). Peter Corney, one of its officers, who remained in Hawai'i when the ship was sold and left descendants here, remarked that "island rope" made excellent running rigging²⁷. Corney noted that the American ship *Milwood* was then at Kailua, "purchasing sandalwood at the rate of 7 dollars for 133 pounds (a picul)"²⁸ ...Corney provides a unique and graphic account of the sea traffic at Kailua Bay in the early 1800s.

At the time of Kamehameha's death in May 1819, and for the early months of Liholiho's reign, the court households at Kailua apparently were very large²⁹.

It was at Kailua in November 1819, approximately six months after the death of Kamehameha, that the "free eating" (*'ai noa*) incident took place, symbolizing the end of the kapu system....The act of "free eating" at Kailua was followed by a general purging and burning of god images from the large heiau³⁰.

Hawaiian historian Samuel Kamakau offers this reference to the life in the area at the time of Liholiho:

Many of the old chiefs were alive in Liholiho's day...The sands of Kaiakeakua were worn down like a dromedary's back by the many feet of chiefs and chiefesses tramping over them, and at Kamakahonu could be seen at night the sparkle of lights reflected in the sea like diamonds, from the homes of the chiefs from Kahelo [in Puapua`a *ahupua`a*] to Lanihau. The number of chiefs and lesser chiefs reached into the thousands³¹.

At this time M. Gaimard, a member of de Freycinet's expedition, wrote the following description of the Kailua environs:

In order to reach the mountain that lies to the southeast of the village...we first went across dry fields, where hardly any young growth was visible; but, after reaching a certain elevation; we found much richer terrain where the paper mulberry, breadfruit tree, the mountain apple, tobacco, cabbage, sweet potatoes and yams were cultivated. We were given water of a delicious coolness³².

²⁷ Ibid:48

²⁸ Ibid:47

²⁹ Ibid:5

³⁰ Ibid:6

³¹ Kamakau 1961:221-222

³² de Freycinet 1978:8

Missionary occupation of Hawai'i had its beginnings at Kailua. Kelly notes that:

Liholiho...[was] at Kailua when the first band of Protestant missionaries arrived there in April of 1820...the missionaries were granted permission to remain in the kingdom on trial for a year. Two missionary families remained in Kailua, while the rest went on to Honolulu³³.

It was at Kailua that Liholiho entrusted the island to Kuakini, younger brother of Ka'ahumanu and faithful aide of Kamehameha I. Three years into Kuakini's stewardship, the Reverend William Ellis began his tour around the island at Kailua in 1823. This passage from his journal reflects the population and resources of Kailua:

Kairua, though healthy and populous, is destitute of fresh water, except what is found in pools, or small streams, in the mountains, four or five miles from the shore³⁴.

Ellis reports the observations made by Reverends Thurston and Bishop who walked the coastline from Kailua toward Ka'iwi Point crossing the entire coastline of Keahuolu:

The environs were cultivated to a considerable extent; small gardens were seen among the barren rocks on which the houses were built, wherever soil could be found sufficient to nourish the sweet potato, the watermelon, or even a few plants of tobacco, and in many places these seemed to be growing literally in the fragments of lava, collected in small heaps around their roots.

The next morning, Messrs. Thurston, Goodrich, and Harwood, walked towards the mountains, to visit the high cultivated parts of the district. After traveling over the lava for about a mile, the hollows of the rocks began to be filled with a light brown soil; and about half a mile further, the surface was entirely covered with a rich mould, formed by decayed vegetable matter and decomposed lava.

Here they enjoyed the agreeable shade of bread-fruit and ohia trees; the latter is a deciduous plant, a variety of *Eugenia*, resembling the *Eugenia malaccensis*, bearing red pulpy fruit, of the size and consistence of an apple, juicy, but rather insipid to the taste. The trees are elegant in form, and grow to the height of twenty or thirty feet; the leaf is oblong and pointed, and the flowers are attached to the branches by a short stem. The fruit is abundant, and is generally ripe, either on different places in the same island, or on different islands, during all the summer months³⁵.

³³ Kelly 1983:7

³⁴ Ellis 1969:29

³⁵ Ellis 1963:31-32

The cultivation and environs described above fall within the zone the project area is located and dispenses the assumption this was all barren lava supporting little life.

This type of gardening in lava is called *makaili*³⁶ when even small pockets of semi-disintegrated lava are utilized, and potatoes are grown by fertilizing with rubbish and by heaping up fine gravel and stones around the vines. Handy writes, "Such cultivation produces inferior potatoes; they are said to be rather tasteless and ridged (*`awa`awa*) or wrinkled"³⁷.

Commodore Wilkes of the U.S. Exploring Expedition made these comments about the environs of Kailua in 1840:

The natives during the rainy season...plant, in excavations among the lava rocks, sweet potatoes, melons, and pineapples... The...staple commodities are sweet potatoes, upland taro, and yams. Sugar cane, bananas...bread-fruit, cocoa-nuts, and melons, are also cultivated. The Irish potato, Indian corn, beans, coffee, cotton, figs, oranges, guavas, and grapes, have been introduced....[Two miles from the coast, in a belt half a mile wide, the bread-fruit is met with in abundance, and above this the taro is cultivated with success...A considerable trade is kept up between the south and north end of this district. The inhabitants of the barren portion of the latter are principally occupied in fishing and the manufacture of salt, which articles are bartered with those who live in the more fertile regions of other south, for food and clothing³⁸.

CHRONOLOGICAL HISTORY OF RESIDENCY AND LAND OWNERSHIP IN KEAHUOLŪ

The above description of subsistence farming and trading within the land divisions is characteristic of pre-contact Hawaiian culture. With the introduction of a market system and the call for labor to harvest sandalwood, agriculture in the Kailua area changed greatly, as did the native population. Early demographics for Keahuolū are difficult to ascertain. Schmitt recorded epidemics for the years 1848 and 1849 as follows:

Four devastating epidemics occurred in rapid succession in 1848 and 1849: measles, whooping cough, diarrhea, and influenza. Together, these four diseases killed more than 10,000 of the perhaps 87,000 persons in little more than a twelve-month period³⁹.

Kelly presents population demographics for North Kona between 1836-1980 reflecting what she suspects reflects successes and failures of various commercial agriculture ventures dependent on the rise and fall of world prices of crops⁴⁰:

³⁶ Forlander 1919-1920, Vol. 6:164

³⁷ Handy 1972:129

³⁸ Wilkes 1845:4, 91-92, 95-97 IN Kelly 1983:19

³⁹ Schmitt 1968:37

⁴⁰ Kelly 1983:92

Year	Population	% Increase/Decrease
1836	5,957	----
1853	4,110	-31.0
1860	3,488	-15.1
1866	3,268	-6.3
1872	2,218	-32.1
1878	1,967	-11.3
1884	1,773	-9.8
1890	1,753	-1.1
1896	3,061	+74.6
1900	3,819	-24.7
1910	3,377	-11.5

During Kuakini's stewardship of the island, walls were built to protect the cultivated lands from the ravages of free-roaming dogs and pigs kept near the coastal habitations⁴¹. One of these walls was recorded by John Papa I'i at Honua'ula in 1812; I'i writes, "A stone wall to protect food plots stretched back of the village from one end to the other and beyond"⁴². Kelly postulates this wall was later incorporated into what became known as Kuakini Wall, which may be traced from its starting point at Palani Road above Kailua Bay to beyond Kahalu'u Bay. It has long been presumed this wall built sometime during Kuakini's governorship (1820-1844) to protect the cultivated uplands from the depredations of cattle, introduced to the island by Captain George Vancouver in 1793. It was not known by this name until after 1855. Until that time it was consistently referred to as the Great Wall, or the Great Stone Wall by surveyors. The Emerson-Kanakanui map of Kailua Town & Vicinity (Reg. Map No. 1676, dated c.1880) identifies it as the "Kuakini Great Wall." The following reference to what is no doubt Kuakni Wall was made by the Reverend Albert Baker:

Just a little above [the stone church at Kahaluu], and continuing all the way to Kailua, is the huge stone wall built in Kuakini's time to keep pigs from the cultivated lands above⁴³.

In his reconnaissance survey of Keahuolū, Rosendahl (1972) notes, "...the Great Wall of Kuakini...is a historic period structure built during the period A.D. 1830-1840 at the direction of Kuakini, Governor of the Island of Hawaii..." Kelly writes of Kuakini Wall:

It has long been presumed that this wall was built sometime during the governorship of John Adam Kuakini (1820-1844) to protect the cultivated uplands from the depredations of cattle. However, as the wall is at all points less than a mile from the seacoast, only the food plots in the coastal region would have been protected by it. It probably would have only kept cattle and horses grazing on the kula away from the houselots and small gardens along the shoreline⁴⁴.

⁴¹ *Ke Au 'Ōkoa*, March 19, 1868

⁴² I'i: 1959:111

⁴³ Baker 1915:83

⁴⁴ *ibid*:75

Unnecessarily high as a barrier to roaming...the Kuakini wall may have been the Pa'aina named as the makai boundary in several claims to land along its course. At times, the wall reaches a height of 8 or 9 feet, which seems cattle or pigs...The fact that the term used in the register of claims is "papipi," which refers to a wall or enclosure for cattle, not pigs, should answer the question of what kind of animal the wall was meant to restrict in the 1840s. Perhaps in more recent years it served other purposes. Why it is located between the grazing land and the gardens, or why it is so high in places, we can only surmise⁴⁵.

In addition to this notable structure were smaller historic walls for similar and boundary purposes. In her report of subsistence lifestyles in Kona, Schilt writes of the *ahupua`a* in this vicinity:

62 historic walls listed...23 walls trending *mauka-makai* pass through the ROW, defining *ahupua`a* boundaries. All are double-faced and core-filled, in good to excellent states of repair. Functioning today as portions of cattle range boundaries, these walls probably originated in historic times, as early as the mid-1800s, having been built for that purpose⁴⁶.

In 1848, during the reign of Kamehameha III, the traditional Hawaiian land ownership system was replaced with a more Western-style system. This radical restructuring was called The Great *Mahele* (division). The *Mahele* separated and defined the undivided land interests of the King and the high-ranking chiefs, and the *konoiki*, who were originally in charge of tracts of land on behalf of the king or a chief⁴⁷. More than 240 of the highest-ranking chiefs and *konoiki* in the kingdom joined Kamehameha III in this division.

Keahuolū was awarded to Anealea Keohokālole (c.1814-1869) who numbered among her offspring King David Kalākaua, Queen Lydia Lili'uokalani, and William Pitt Leleiōhoku (adopted by Ruth Ke'elikōlani). Keohokālole was a great-granddaughter of both Kame'eiamoku and Keawe'ehuleu two of the important chiefs who supported Kamehameha I in his rise to power⁴⁸. Kame'eiehiwa states, "Keohokālole was regarded by the Kamehameha clan as an *Ali'i Nui* in honor of the great courage and loyalty proffered by her ancestors in their support of Kamehameha⁴⁹." As *Ali'i Nui* Keohokālole held the fifth largest number of *'āina* after the *Māhele* with 50 parcels⁵⁰. She relinquished 48% of her original 96 *'āina* to the *Mō'i* [King] retaining 23 parcels on Hawai'i, 25 on Maui, and two on O'ahu. Of her lands on the island of Hawai'i two-thirds were located in the Kona District⁵¹.

Keohokālole award for Keahuolū is LCA 8452, Apana 12 (Royal Patent 6851). This award had a total area of 4,071 acres. She conveyed 15,000-20,000 acres of Keahuolū lands with the balance going to her heir, Lili'uokalani. Attached to the following letter is a list of lands including Keahuolū:

⁴⁵ *ibid*:76

⁴⁶ Schilt 1984:44

⁴⁷ Chinen 1958:vii and Chinen 1961:13

⁴⁸ Kame'eiehiwa 1992:230

⁴⁹ *ibid*.

⁵⁰ Kame'eiehiwa 1992:245

⁵¹ Kelly 1983:31

To Highness, John Young
Minister of Interior

Greetings:

This is to inform you and the Privy Council of my desire to convey some of my lands for the Governments one third in the land which remain as mine. Grant me this, of course, with the approval of the Privy Council Below is a list of the lands I wish to convey to the government⁵².

To Your Highness, John Young
Minister of Interior

Greetings:

Here is a list of names of my lands which has been left for me pending for an approval of its distribution....Keahuolū ahupuaa, Kona, Hawaii...

With appreciation,
Keohokalole⁵³

The following testimony was given by Awahua, to verify Keohokālole's holding for LCA 8452 in Kona:

Awahua, sworn, says he knows the house lots claimed by Keohokalole at Kaawaloa, Hawaii. The first one is fenced all round with a stone wall. It is bounded makai by the sea shore, on Kailua side by the Government land, mauka by the land of Nahaku, and Awahua, and on the other side by the road. Claimant derived this lot from her ancestors, who held it from very ancient times. There is a stonehouse and several grass houses in it belonging to claimant, besides a tomb.

The second lot is called "Awili," and is fenced all round. It is bounded makai by government road., on Kailua side by the same, mauka the same, on the side next [to] the pali by the road.

Claimant derived this lot from her ancestors, who held it from older times.

Witness knows the three house lots in Kealakekua, claimed by Keohokalole. The first lot is called "Kulou" and is fenced in. It is bounded makai by the sea beach, Kaawaloa side by government land, mauka by the road, south Kona side by a lot belonging to T. Cummings.

The second lot is called "Kaahaloa" [and] it is enclosed all round, and bounded on Kona Hema by a lot belonging to T. Cummings, mauka by the lot of Nakoko, North Kona by an hold heiau, makai by the road.

⁵² Native Testimony v10:326

⁵³ Native Testimony v10:327

The third lot is called "Wailokoalii" and is bounded on the South Kona side by an old Heiau , mauka by a Government lot and the lot of Ialua, makai by the sea beach, on the other side by a pali.

Claimant inherited these lots from her ancestors by the mother's side, who possessed them from ancient times. Kekaalua, sworn, says he knows these lots perfectly and confirms in full the testimony by Awahua⁵⁴.

Whenever *alii* received an entire *ahupua'a*, they were bound to respect the rights of the existing tenants. These tenants, if they filed a claim to The Board of Commissioners to Quiet Land Titles, could continue to cultivate and reside on their parcels. The following testimonies are for such awards granted within Keahuolū:

Land Commission Award (LCA) 11071 to Aki for .60 acres

Kuia sworn, He has seen Aki's land that which he had cultivated himself, it is in the *ili* land of Pauaiki of Keohoeolu [sic] ahupuaa in Hawaii. Section 1, five cultivated kihapais. Section 2, one kihapai not cultivated. Section 6, four cultivated kihapai. Section 7, one cultivated kihapai. These interest have been made from Kaea, Nahaalualu and Kalekahi at the time of Kamehameha I⁵⁵.

LCA 10303 to Maa for 2.25 acres

Mahu sworn, He had seen a whole section of land, however, it is just as he has indicated in his claim that there are eleven taro kihapais, and ten potato kihapais in the *ili* land of Maili of Keahuolū ahupuaa. That land is not cultivated completely, but, Maa had planted seven palm trees. The fruit is for Samuela, both Maa and Samuela have joint interest in the seven fan palm trees. There is also a coconut grove which had been planted by Maa's grandparents for the Chings who owned the land, they were the caretakers. The same had applied to Maa's parents and to him at the present time. The coconuts went to Keohokalole upon the death of Keoua and it has been that way to the present time.

One whole section is salt land and it is still yielding salt...Land passed down to Maa's parents, these to him now. Maa's grandparents received the *ili* land Maili of Keahuolū during the time of Kamehameha I. Kamauoha had given to Maa the land section of Lanihau ahupuaa in 1848, no one had object to him⁵⁶.

LCA 10345 to Nahaalualu (Naalualu) for 2 acres

Kuia sworn, He had seen Naalualu) place that he had cultivated himself in the *ili* land of Puuokaliu of Keahuolū ahupuaa in Hawaii. Section 1 (boundaries given) one section cultivated. Section 2, four cultivated kihapai, Section 3, one cultivated kihapai, Section 4, four cultivated kihapais...⁵⁷

⁵⁴ Foreign Testimony v3:573

⁵⁵ Native Testimony v4:527

⁵⁶ Native Testimony v4:526

⁵⁷ Native Testimony v4:527

LCA 10198 to Hailewalewa (Kailewalewa) for 1.30 acres

Mahu sworn, He has seen the place on which Hailewalewa had cultivated with his own hands, it is in Ulelele ili of Keahuolū ahupuaa. Section 1 taro. Section 2, Kaluulu. Land has been cultivated, one land section. On land from Hailewalewa's parents to him. Uncertainty for one section⁵⁸.

LCA 8012 to Apiki for 1.10 acres

Mahu, sworn, says he knows the kuleana of Claimant in Kailua, Kona. It consists of five patches of Kalo and a lot of patches of potatoes. The kalo patches form one piece, bounded on Kau side by Lanihau, makai by Papaula's land, Kohala side the same, mauka by Hai's land. The potato land is bounded mauka by Haino's land, Kau side by Lanihau, makai by Kahili's land, Kohala side the same. Claimant derived the land from the Konohiki, before the death of Kuakini, and has held it ever since without disputes⁵⁹.

LCA 7351 to Kahuanui for 2.90 acres

Papaula, sworn says I know the claim of Kahuanui. It is in the ahupuaa of Keahuolū, Kona. It consists of one piece of kalo land, five patches—all lying together. One of these patches if planted with coffee. It is bounded mauka by the land of Kahookohukaneole, Kau by Lanihau, makai by the land Nahaalualu, Kohala by the konohiki. Claimant received this land from his brother in 1846, and his title has never been disputed⁶⁰.

Two references to Keahuolū were found in the Hawaiian language newspapers that have been digitized and available online at *Ulukau: Hawaiian Digital Library*⁶¹. Unfortunately, they provide little insight to land use

Olelo Hoolaha.

O MAUA NA MEA NONA NA INOA Malalo nei, ke hai aku nei maua i na mea a pau; e kii mai i ko oukou mau holoholona, e hele ana Ma Keahuolū a me Lanihau, iloko o keia malama o Dekemaba, 1862, me ka uku kupono. A o na holoholona e loaa ia maua mahope o keia makahiki, e hoopaa ana maua ma kahi kupono, a e uku mai ka mea nana ka holoholona, a o ke kahu paha nana e malama \$5 00. A oi aku paha no ke komo hewa, a me ka poino, a me ka luhi i ka ho-a ana; no ka mea, ua pilikia na hoaina i ka oukou holoholona.

P. KAPAE.⁶²

J. NAKEWIKI.

Kailua, Hawaii, Nov. 28. 1862. 56-3t⁶³

Announcement.

We are the ones whose names are below, we would like to let everyone know to come and collect your animals that are moving about in the Keahuolū and Lanihau areas in December 1862, with the proper payment. And as for those animals that still remain with us after this year, we will secure them in the proper area, and owner of the animal will pay us, and his keeper will profit \$5.00 or more

⁵⁸ Native Testimony v4:525

⁵⁹ Foreign Testimony v8:676

⁶⁰ Foreign Testimony v8:682

⁶¹ www.ulukau.org

⁶² These names are most likely aliases.

⁶³ *Nupepa Kuakoa*, Vol.1 No. 56, 20 December 1862

for trespassing and danger, and for roam and the trouble it caused to the land for these animals

Olelo Hoolaha

EIA MA KO'U LIMA KEKAHI WAA UUKU, ua loa ia'u ma ka moana, ma kahi e kokoke ana I ke awa poe o Pawai, aole he aina, he mau ia kono nae, ua loa ia'u kela Waa, iloko o na la hope o ka malama o Maraki i hala ae nei. E kii kokie mai ka mea nona keia Waa, me ka uku mai he \$15.00, ina aole e kii mai ka mea nona keia Waa, alaila, e lilo no ia'u keia waa, e like me na laau pae.

MAA.

Keahuolū, Kona A., Hawaii, Mei 16, 1865.

5-2t⁶⁴

Announcement.

I have a small canoe that I got in the deep ocean, near the round bay of Pawai, not near land, but it did have some fish in the last days of this past March. Whoever this canoe belongs to should come and get it quickly and pay \$15.00, if you don't claim your canoe I will possess this canoe as my own like the pieces of wood that just wash ashore.

Correspondence to the Minister of Interior often provides insights to land use and transactions. In a report by J.H. Kalaiheana, dated April 25, 1866, Keahuolū is said to belong to Keohokālole. In a letter dated July 8, 1869 from David K. Kalākaua to his sister, Lili'ūokalani, a detailed description of Keahuolū is provided. Kalākaua writes:

This land is situated in the District of North Kona, bounded by the ahupuaa of Lanihau (in Kailua) belonging to Prince Lunalilo on the Kau side, and on the Kohala side, by Kealakeha, a government land and Honokohaniki belonging to Keelikolani. Keahuolū runs clear up to the mountains and includes a portion of nearly one half of Hualalai mountains. On the mountains the koa, kukui and ohia abounds in vast quantities. The upper land or inland is arable, and suitable for growing coffee, oranges, taro, potatoes, bananas &c. Breadfruit trees grow wild as well as the Koli oil seed. The lower land is adopted for grazing cattle, sheep, goat &c. The fishery is very extensive and a fine grove of cocoanut trees of about 200 to 300 grows on the beach. The flat land near the sea beach is composed chiefly of lava, but herbs and shrubbery grows on it and [it is] suitable for feed of sheep and goats. It is estimated at 15,000 to 20,000 acres or more.

A letter written by Lili'ūokalani to the Minister of the Interior, dated October 6, 1894, gives permission for a road to run through Keahuolū, and includes orders for the Government to fence both sides of this road.

On a map drafted by J.S. Emerson in the 1880s (Reg. Map 1280), a narrow band of shading running in a north-south direction crosses Keahuolū. This band is at the approximate elevation of 6,250 to 7,250 ft. In Emerson's Field Notebook sketches, this line is identified as the "Commencement of the Forest." The notebook notes that *ma uka* of the forest line, the land is "lava covered with scattering forest and dense masses of *ki [ti]* root⁶⁵." *Ma kai* of the forest line he

⁶⁴ *Ke au Okoa*, Vol. 1, No. 6, 29 May 1865

⁶⁵ Kelly 1983:58

described as "rocks covered with long grass"⁶⁶. Kelly approximates this forest edge at an average elevation of 550 to 650 ft. from Kailua south⁶⁷.

As recently as the 20th century existed a small village of *ōpelu* (Mackerel scad) fishermen who resided at a coconut grove in Keahuolū. Behind this village, known as Makaeo, were several large brackish water ponds where *ōpae'ula* (*Crangon ventrosus*) thrived. These shrimps were used to mix in the *palu* or chum, used for catching *ōpelu*. Several springs and one well provided potable water. The village, coconut grove, and all the pools but one were destroyed during the construction of the Old Kona Airport⁶⁸.

Cartographic material depicting Keahuolū was sought at the State Department of Accounting and General Services, Survey Division. A 1929 U.S.G.S. topographic quadrangle indicates a sisal (*Agave sisilana*) mill located in Keahuolū. Kelly briefly discusses this crop in her 1983 history of the *Gardens of Kona*, quoting Thrum in 1905: "The McWayne sisal tract consisted of about 500 acres at or near Kailua"⁶⁹. Kelly adds, "...how much of this acreage was actually planted in sisal is unclear"⁷⁰. In an attempt to locate the cultivated area, various articles were consulted and informant interviews were conducted. Early periodical reports focus on sisal cultivating efforts on O'ahu. However, the earliest mention of McWayne's efforts were found in the *Honolulu Advertiser's* column "History from our Files," which reports for 1918 that "[t]en tons of baled sisal, first of an estimated crop of 200 tons from the McWayne Estate, Kailua, Kona, reached Honolulu for transshipment to San Francisco"⁷¹. Herman D. Nichols, vice-president of Tubbs Cordage Co., suggested in a 1949 editorial that utilization of sisal fiber of wild plants throughout the Territory be explored⁷².

Mr. Minoru Inaba was interviewed by the author in February 1990, as he was employed at the sisal mill after he finished the 8th grade in 1921. He said the mill was owned and operated by Luther S. Aungst from 1917 until its closing in 1924. Inaba recalls there were over 1,000 acres in cultivation in the *ahupua'a* of Kealakehe and Keahuolū. The mill, abutting Palani Road, was surrounded by sisal fields. The challenge, Mr. Inaba noted, was getting the sisal from the fields to the mill, as it was very bulky and sharp. Field workers cut the sisal in the field, then bundled and transported it on donkeys to the mill. At the mill the sisal was thrashed, dried, and baled. From Kailua Bay, the bales of dried sisal would be shipped to San Francisco on steamers. Mr. Inaba's job was to dispose of the by-products. Working with the sisal "made his skin itchy," and he wore protective clothing. According to Mr. Inaba, Mr. Aungst played an important role in the development of the Kona district. He started the telephone company that connected Kona with Waimea, and later added Volcano to its line. This phone systems was eventually sold to Mutual Telephone Co., Aungst was also the postmaster and owned a garage in Kona⁷³.

⁶⁶ *ibid*:59

⁶⁷ *ibid*:58

⁶⁸ Clark 1985:110

⁶⁹ Thrum 1905:185

⁷⁰ Kelly 1983:89

⁷¹ *Honolulu Advertiser* July 31, 1948, editorial page

⁷² *Honolulu Advertiser* September 20, 1949

⁷³ pers. comm. February 1 and 8, 1990

SELECTED DOCUMENTATION OF THE HISTORY AND ARCHAEOLOGY OF KEAHUOLŪ

Table 1 provides a summary of selected archaeology projects that have been conducted in the study area.

An island-wide description of sites was published by Henry Kinney in the earlier part of the 20th century. Kinney writes of the Keahuolū shoreline:

From the point where the Honokohau Trail leaves Kailua a poor trail leads makai over the lava to the lighthouse. Hence it continues along the beach for a couple of miles. After passing several old stone mausoleums, the trail passes an abandoned grass house where is a stone wall, the remnants of the heiau Keohuulu [sic]. Still further north is a coconut grove, where there were several kuula here, one particularly powerful one, the idol of which is still remembered as having been in a fair state of preservation, only one arm missing, when a Christian pries took it from the cave where it was kept. Since then, say the inhabitants, the fishing has been comparatively poor. In the grove are two cocoanut stumps which served as gallows for the first execution conducted by hanging in Hawaii. A chief, Kekuakahaku was the victim.

Beyond the main [coconut] grove are a few isolated trees near the edge of the flow. Here was the heiau of Pauai, and here the trail ends⁷⁴.

The area in which Pauai *heiau* is located is known as Pāwai. Research by the Lili'uokalani Trust has determined that Pāwai is an abbreviation of Papawai and this is the name the Trust uses. Papawai's literal meaning is water stratum. It is also known as Bean's Beach⁷⁵.

In his 1919 report on *heiau* on the island, J.F.G. Stokes reports the following sites within Keahuolū:

Ko'a of Halepau, in Halepa'u Section...A small fishing heiau on the pahoehoe, 100 feet north-west of Keahuolū. Well preserved walls, 4 feet high (Site #10-27-2139)

Heiau of Kawaluna...on the beach, a quarter mile from the boundary of Lanihau, in a section (ili) called Pawai. An enclosure, the walls of which have been carefully rebuilt, without opening. The interior was filled with loose stones piled up without arrangement. The local informant stated that an old fisherman was in the habit of offering fish in this heiau. Asked as to the resulting luck, the answer was that it was not as much as that of other fishermen, perhaps because the offering was made at a heiau instead of the ko'a (Halepa'u) nearby.

⁷⁴ Kinney 1913

⁷⁵ Clark 2000

Table 1 – Summary of Archaeological Findings Within Keahuolū

Year	Author	Scope	Zone	Findings
1919	Stokes	Heiau Survey	Coastal/Inland	3 heiau
1930	Reinecke	Reconnaissance Survey	Coastal	12 sites primarily habitation platforms & enclosed yards
1970	Emory	Site Inventory	Coastal/Inland	2 heiau discussed
1970a	Newman	Inspection	Coastal	Historic burials and "bait cups"
1972	Bevacqua	Reconnaissance Survey	Coastal	9 sites
1973	Neighbor Island Consultants	Reconnaissance Survey	Coastal	Historic burials located
1975	Sinoto	Reconnaissance Survey	Coastal	7 sites – temporary structures
1978	Ching	Reconnaissance Survey	Coastal	59 sites – salt pans, cave shelters, paving, cairns
1979	Rosendahl	Reconnaissance Survey	Coastal	4 complexes, 2 modified sinkholes, 2 wall sections, 1 cairn, 1 rock shelter, 2 petroglyph areas, 1 walled enclosure
1980	Estioko-Griffin & Lovelace	Reconnaissance Survey	Coastal	35 sites – caves, petroglyphs, burials, house sites
1980	Folk	Reconnaissance Survey & Test Excavations	Coastal	21 sites in 3 kipuka – 7 pavements, 3 caves, 2 platforms, 4 historic/recent campsites, 1 burial/shrine, animal enclosure, 3 habitation areas
1980	Neller	Reconnaissance Survey	Coastal	
1983	Soehren	Survey	Inland	Sisal plantation remnants
1983	Rosendahl	Survey	Inland	2 sites – agricultural and habitations, possible ceremonial and burial. One site was later found destroyed
1984	Schilt	Field Work	Coastal/Inland	Kuakini Highway realignment crossing 24 ahupua`a. Within Keahuolu – cairn and modified outcrop
1990	Donham	Reconnaissance Survey	Coastal/Inland	239 sites – pāhoehoe quarry, agricultural excavations, rock mounds, modified blisters or outcrop, the majority interpreted as agricultural features
1989	PHRI	Inventory Survey	Inland	Sites indicate relatively intensive agricultural activities
1990	PHRI	Inventory Survey	Inland	32 sites – agricultural/boundary-related, temporary habitation
1993	O'Hare & Rosendahl	Inventory Survey	Inland	18 sites – agricultural, temporary habitation, burial, historic dump, transportation feature, quarry and marker
1993	PHRI	Field Inspection	Inland	16 sites – ceremonial and burials
2007	Haun	Inventory Survey and Assessment	Inland	5 sites – agricultural, temporary and permanent habitation

Heiau of Palihiolo, at Waikilohi, at or near the boundary of Keahuolū and Lanihau, North Kona; on the beach in an old coco-palm grove; this is an insignificant pen, 25 by 29 feet in size with small, thin walls built on the upper slopes of the beach. Coral has been spread over the floor as a paving. The only interest attaching to the place is the account given by a very old native living in the grove. He said that Palihiolo was formerly a heiau for human sacrifice [luakini], and that it was rebuilt by Kalakaua's orders before the latter left for the United States (ca 1890). The old native also said that Kalakaua promised to have a sacrifice at Palihiolo on his return from America, but that he died in that country⁷⁶. The old native was very insistent on the truth of his statements. It might be mentioned that the surrounding grove of palms is where Kalakaua's grandfather was hanged for murder⁷⁷. Other information from the old native is given here for convenience, that this king ordered the rebuilding of the two heiaus of Kawaluna and Palihiolo where human sacrifices were formerly offered, and the ko'as of Halepa'u and Maka'eo....It might be remarked that these four structures have the appearance of having been rebuilt in recent times⁷⁸.

Ko'a of Maka'eo...This is a small pen, 200 feet from the sea and about half a mile to the southeast of Palihiolo.

In 1930 John Reinecke conducted a survey of Hawaiian sites on the Island and reported on sites in Keahuolū. Comments for these sites [in parentheses] were provided by Earl Neller in 1980:

Site 4. A group of masonry platform graves on the sand beach. (Referred to as "graves of chiefs" in Jackson's 1883 Field Notes, p.32)

Site 5. Remains of a platform of large stones. Near this is a notable group of petroglyphs. There is also a hole with a ring around it, a form of carving which I have found elsewhere, but what it represented is hard to say—perhaps a *kohe*. There are also *papamū*⁷⁹: a clear one 16 x 13; a very fine one with evenly arranged holes 1½ in diameter; and a third too dim to make out the rows, but there must have been about 12 each way.

Site 6. A large masonry tomb or powder magazine with very massive walls. (Note; This is probably the structure referred to as "Kamehameha's Tomb" in George Jackson's 1883 Field Notes, p.30)

Site 7. ON the beach, the ruins of a platform and pen of boulders; on the *pāhoehoe* back of this, a small house platform of *pāhoehoe* fragments. (This could be Stoke's "Ko'a of Maka'eo")

Site 8. Remains of a medium-sized platform, sand-covered. From its position, it may be a fishing *heiau*. By it is an old *papamū*, 12 x 11. (This could be Stoke's "Ko'a of Maka'eo")

⁷⁶ Kalākaua died on January 20, 1891 in San Francisco attributed to Bright's disease. Bailey:1975:302

⁷⁷ Kamanawa, Kalākaua's paternal grandfather was hung for murdering his ex-wife Kamoku'iki by giving her poison in a cup of 'awa. Kamanawa was the first public execution under the 1840 laws.

⁷⁸ Stokes 1919

⁷⁹ Stone on which the checker-like game, kōnane, was played

Site 9. Group of ruins centering about the ponds of Makeo. (This site has been largely destroyed by construction of the old Kona Airport.) About 200' NW of Site 8 is a modern pen, and by it a large coral-strewn platform (perhaps Stoke's "Heiau of Paliholo") and the remains of a very old pen. Back of that, among *kiawe*, are five house platforms, all but one being coral-strewn, two enclosures which seem to be walled house sites, and two very old house platforms. The small fishpond is divided into seven sections. It is now shallow and muddy, but was once carefully walled up—a feature common to the brackish ponds along this coast. Even yet they are occasionally cleansed of their scum. Between it and the large pond is a small platform like a *puoa* [pū'o'a]⁸⁰. The marsh contains one large pond, with many small pools and waterholes, some of them walled round.

Site 10. Well-built walled platform, walls 3½' wide and 3' high; inside dimensions 12 x 11½; floor about 6" off the ground. A small platform near. (This site destroyed by construction of old Kona Airport – EN)

Site 11. Near the house at Makeo, on the beach: a very dim *papamū*, 7 x 6, and a petroglyph. (This site probably destroyed)

Site 12. A series of yard walls by the house of Makeo:

- a. House site in the yard of the present residence. (This site probably destroyed)
- b. Modern house site with brackish pool behind.
- c. Pen, probably once surrounding a water pool.
- d. House, platform and pool.
- e. Old, small house platform on a knoll. Farther on is a pen and three old, small house platforms, and perhaps a *puoa*.

Site 13. Modern house platform and graveyard. (This could be Stoke's *Kawaluna Heiau*)

Site 14. Three small old house platforms; canoe landing; a modern house platform with an old house site in the same lot; a pen (about 50' x 35') containing a platform, chiefly a mass of rough, large stones—uses unknown.

In 1970 Kenneth Emory prepared an inventory of known sites for parts of the Big Island including Keahuolū. [Comments in parentheses by Earl Neller]

⁸⁰ Tower, steeple, pyramid, peak; house for depositing a corpse

3841 (D9-4) Lanihau, Kailua-Kona, SW of old airport. Petroglyphs, located in three clusters, totaling 75 units, includes dots, circles, diagrams, and triangular and linear figures. (This site is probably the one southeast of the old airport)

3842 (D10-1) Waikilohi beach at Keahuolū. Palihiolu Heiau, and enclosure 25 by 29 feet with a coral pavement, not located.

3843 (D10-2) Pawai beach at Keahuolū. Kawaluna Heiau, an enclosure used until recently by fishermen as a *ko'a* or fishing shrine, not located.

Also in 1970 Thomas Stell Newman made a field inspection for State Parks and reported on a few sites [comments in parentheses by Earl Neller]:

10-27-2000 Lanihau Petroglyphs. Southeast of runway. Traditional Hawaiian stick figures; about 15 figures, on a *pāhoehoe* blister. Recommend valuable (This site on fringe of Bishop Museum's Site #3841)

10-27-2001 Lanihau Papamu. 50 meters *ma kai* of runway. A single human stick figure petroglyph holding something in right hand. A large *pāpamu* of 11 by 12 rows of holes. Nearby is a very small *kōnane* board of 3 by 4 rows of holes. Condition good. This site is important. (This seems to be part of Reinecke's "Site 8")

10-24-2002 House & burials. Located 100 meters west of *pāpamu*, site 2001. 25 meters *ma kai* of the runway. Rectangular enclosure, 5 by 6 meters, stacked stone walls about .5 meters high, walls partly collapsed, artifact collectors have excavated a portion of the interior; no midden seen. 10 meters north of enclosure are two graves, slab-lined crypts barely visible, about 2 x 4 meters. The central area of both graves is filled with small rubble (This could be part of Reinecke's "Site 9." It could also be Stoke's Palihiolo Heiau)⁸¹

{No site number} A modern burial area lies off the west end of the main runway and I suspect there are still living relatives for those buried there. Numerous bait cups or holes ground in the rocks just back of the high tide mark are to be found all along the beach but it would not appear to be in any danger from construction. (This is probably Reinecke's "Site 13")

A walk-through archaeological survey of the Queen Lili'uokalani Village – Unit 3 Tract⁸², some 100 acres, was conducted in September 1972 by Paul Rosendahl. The subject parcel is located on the *ma kai* side of Palani Road. Fourteen archaeological features were found including five stone walls, two platforms, two stone mounds, two stone-walled enclosures, one foot trail, one small cave shelter, and one road causeway. Rosendahl noted "none have any real excavation potential, none are features of outstanding structural or other characteristics, and none have any real known historical interest, value, or significance⁸³." Two stone walls were recommended to be preserved for their scenic value.

⁸¹ Palihiolo Heiau was later placed within Lanihau and assigned SIHP Site #2002 with several burials identified by Newman.

⁸² TMK 7-4-08

⁸³ Rosendahl 1972:7

In 1975 Aki Sinoto surveyed a road corridor in coastal Keahuolū. He identified seven sites, all small, semi-permanent or temporary structures associated with coastal marine activities⁸⁴.

Lloyd Soehren conducted a reconnaissance survey of two parcels near Kamakahonu in Lanihau 1st August 1976. Soehren identified a “*kuaiwi* or low mounding of small stones into a row containing scattered pebbles of waterworn coral” which he considered an *ahupua'a* boundary marker between Lanihau and Keahuolū⁸⁵. This “windrow extended some 300 yards eastward before it is obliterated, and is coincident with the present boundary. It continues to the west, prolonging the line toward the shore rather than following the present, deviant boundary which parallels the shore for some distance. The antiquity of the feature is unknown, but almost certainly predates European contact⁸⁶.” These two parcels are both *ma kai* of Kuakini Highway outside of the present project area.

An archaeological survey of a section *ma kai* of the Queen Ka'ahumanu Highway near the Old Kona Airport, also owned by Lili'ūokalani Trust, was conducted in November 1978. Fifty-nine sites with 140 separate features were discovered. Most of the features were concentrated along the coast and were subject to ocean damage. Although small cave shelters along the coast and slightly inland contained cultural deposits and were deemed to have value for excavation and subsequent historic interpretation, it was noted the inland portion of the parcel was devoid of significant remains. The single exception was Site 6540, which consisted of a cluster of occupation features including platforms, paved areas and cave shelters⁸⁷.

An additional reconnaissance survey of a c. 20-acre parcel, where the QLT Education Center is located, was conducted by Folk in 1980, revealing no sites. However within three *kipuka* near the shore Folk documented seven pavements, three caves, two platforms, four historic campsites, a burial or shrine, a historic animal enclosure, and three habitation areas⁸⁸.

In January 1983, Lloyd Soehren conducted an archaeological survey on a Keahuolū parcel (TMK 7-4-08:001) *ma uka* of the Queen Ka'ahumanu Highway and adjoining Queen Lili'ūokalani Village, between 800 and 1000 feet elevation. Soehren identified the parcel as part of the former sisal plantation. He did not identify any archaeological sites save the entrance to a small lava tube near the west boundary, which he deemed void of any Hawaiian cultural activity.

Theresa Donham, working for Paul H. Rosendahl, Inc. (PHRI), conducted an archaeological inventory survey for a portion of the current project area (TMK 3-7-04-08:Por 2, 12) between 1989 and 1990. Two hundred thirty-seven newly identified and two previously recorded sites containing a total of 1,810+ component features were identified. Twenty-five sites were assessed as having value as examples of site types and were recommended for interpretive development. All but two of the 25 sites are within an area designated as an archaeological preserve by QLT. Eight of the 25 sites were assessed as having provisional cultural value due to the possible presence of burials. Two of the 25 sites, Māmalahoa Trail and Kuakini Wall, were assessed as having interpretive and cultural values. Six cave sites were recommended for preservation the due to the presence of human skeletal remains⁸⁹.

⁸⁴ Sinoto 1975:3

⁸⁵ Soehren 1976:1

⁸⁶ *ibid.*

⁸⁷ Archaeological Research Center Hawaii (Ching) 1978:1

⁸⁸ Folk 1980:21-22

⁸⁹ Jensen 1992:1

Haun & Associates recently conducted archaeological surveys for Queen Lili'ūokalani Trust. A survey of TMK:7-4-015:15, a c. 5-acre parcel, was conducted in March 2007. A survey of TMK:7-4-015:14, a 3.982-acre parcel, was conducted in May 2007. No archaeological sites were identified in the former survey area, and five sites with seven features were identified in the latter. The features were interpreted as agricultural, temporary and permanent habitation; no features were recommended for preservation⁹⁰.

INFORMANT INTERVIEWS

Informant information for the current project is from interviews conducted for a number of previous cultural impact assessments prepared for Keahuolū, and from follow-up interviews conducted recently. Only information from the interviews that is pertinent to this study is presented here.

Mahealani Pai

Mahealani Pai, Cultural Specialist for Kamehameha Investment Corporation [Bishop Holding Corporation], is a descendent of an 'ohana who traces their residence in the Kona district to the 1700s, specifically to Honokōhau-Kaloko. He is widely recognized as a cultural practitioner and authority representing the Royal Order of Kamehameha at many public hearings. He is also a contributor to published works, e.g., *Islands in Captivity: The International Tribunal on the Rights of Indigenous Hawaiians* and *All Our Relations: Native Struggles for Land and Life*⁹¹; and is tireless advocate for the preservation of Hawaiian sites and practices.

Mahealani's 'ohana resided near the shoreline of Keahuolū during the 1930s, moving there from Honokōhau. They fished Keahuolū waters for 'ōpelu and aku, selling their catch to George Kailiwai mā. Mahealani's young father found temporary employment at the sisal mill *ma uka* of the present Queen Ka'ahumanu Highway. Mahealani's grandfather utilized sisal for the making of *kaula* (rope), and he dyed the rope, and used it to secure and hang fishing implements.

Mr. Pai noted that *alahe`e* (*Canthium odoratum*) which was used for the batten of traditional thatched structures, was gathered in the *ma uka* lands of Keahuolū. Mahealani's concern for the present project is that cultural resources like *kaula* (*Alphitonia ponderosa*), *uhiuhi* (*Mezoneuron kauaiense*), and *alahe`e* (*Canthium odoratum*) be preserved.

Mr. Pai was able to provide information on several places and geographical features in Keahuolū. Mahealani noted a trail his mother would utilize as recently as the 1950s. Starting in Kailua between the current Taco Bell and a car rental agency office, the trail went through Keahuolū onto Kealakehe and Honokōhau. When the seas were *mālie* (calm) they would take the canoe to reach Honokōhau, but when the seas were rough, they would take this trail. The home of Kaelemakule was located at the Kailua end of this trail.

Pai said that Makaeo is the place name for the stretch of area formerly known as the Kailua Kona Airport, where cattle were held before being shipped out on the steamer *Humu`ula*. Makaeo was identifiable by a large coconut grove.

A landmark known as *Pohakūloa* is located south of patches of sand beaches owned by Queen Lili'ūokalani Trust, stands as a lone sentinel for locating a nearby 'ōpelu ko`a. The 'ōpelu

⁹⁰ Haun May 2007:ii

⁹¹ Churchill, W. et al. 2005; Laduke, W, 1999

ko`a is known as *Halepao`o*, for the jumping fish *`o`opu* (general name for fishes included in the families Eleotridae, Gobiidae, and Blennidae).

Mr. Pai also noted that Kalualapauila Heiua is located on the northern *ma uka* boundary of the Kealakehe and Honokohauiki, in the vicinity of La`iopua near the Kealakehe Homestead [this would place the *heiua* outside the current project area]. If this *heiua* can be identified, he notes, it too should be preserved.

Clarence A. Medeiros, Jr.

Clarence A. Medeiros, Jr. is a descendant of several well-known *kama`āina* families of the Kona region. The son of Clarence A. Medeiros, Sr. and Pansy Wiwoole Hua Medeiros, his grandparents include Frank C. Medeiros and Violet Mokuohai Parker and Charles Hua, Sr. and Annie Man Sing Zen Hua Weeks. He has familial ties to the lands of Honokua, South Kona, and Haleki`i and Kanaeue, North Kona. Both of his parents were native speakers. His mother, an accomplished weaver, is a descendent of native fishermen and canoe builders. His father descended from two renowned canoe builders, John Mokuohai and Charlie Mokuohai Parker. Clarence Sr. repaired rock walls in Kona and Kohala, including the walls of the National Parks of Pu`uhonua o Hōnaunau and Pu`ukoholā. Clarence Sr. was recognized as a cultural and historical resource, and it was from him and Earl Leslie, Sr. that Clarence Jr. learned much of his knowledge of Hawaiian cultural practices and history.

Clarence, Jr. continues to harvest *maiapilo* or *pilo* (*Capparis sandwichiana*) within Keahuolū for the plant's medicinal properties. During an interview on December 17, 2007 he stated the *pilo* grew readily on the area currently being cleared by Queen Lili`ūokalani Trust, near the Queen Ka`ahumanu Highway. According to Clarence, *pilo* does grow *ma uka* of the highway and up to the 300' elevation, but at these elevations it is mixed in with other shrubs and harder to procure. Clarence, Jr. also referred to the sisal plants in Keahuolū used to make rope. Provided with maps of the project areas, Clarence voiced his concern that the environment will be compromised and the *pilo* will be endangered.

Clement "Junior" Kanuha

Clement "Junior" Kanuha is a *kama`āina* of Kona, active in perpetuating Hawaiian practices. He has represented cultural practitioners and cultural descendants on the west side of the island as a member of the West Hawai`i Fisheries Council, at Burial Council hearings, and at many other cultural/environmental organizations. He has assumed the role of caretaker of Keolonahihi *heiua* in Kailua. "Junior" was provided maps of the current subject parcel. During conversations with him on November 9 and December 17, 2008 Junior did not mention any specific cultural practices or sites within the project areas.

Ulalia Ka`ai-Berman

Ulalia Ka`ai-Berman is a *kupuna* with the Department of Education's Kūpuna Hawaiian Studies Program. A child of Ernest Kakhoku Ka`ai and Josephine Ulalia `Ikuwā Ka`ai, her family has over 70 years of residential ties with North Kona. Learned of the *mo`olelo* of Keahuolū from A`ala Roy Akoa between 1970-1981, she is knowledgeable regarding the fishing and farming traditions of the area. During conversations with Ms. Berman she noted the cultural practice of gathering grasses for thatching and the building a hālau at Pāwai in Keahuolū.

Cultural information pertinent to the current project area is presented in this table:

Table 2. Summary of Cultural Knowledge of Informants

Informant	Relation	Reporter	Site	Notes
Mahealani Pai	ʻOhana traces vicinity residency to the 1700s	H.W. Smith	Makaʻeo, Pohakūloa near an ʻōpēlu koʻa, Kalualapauila heiau. Cultural plants: <i>alaheʻe</i> , <i>kauiia</i> , <i>uhluhi</i> .	Kalualapauila Heiau on the boundary of Kealakehe and Honokohauiki at Laʻiopua.
Peter Keka	Kona kamaʻāina	Kanahele ⁹²	Maliu Point	Aka Puʻuoina
			Kaukauholo is the name of the beach and cliff area within Keahuolū	
			Hale Laʻī o Hiʻiaka is synonymous with Hiʻiakanoholae and Keahuolū Point	
			Puʻukaloa	A small <i>ahu</i> near a guava tree in Keahuolū
			Hale o Paoʻo	Keka considers Pāwai and Papawai different locations. The latter is a flat area <i>ma uka</i> of Makaeau rock out side of the old airport, which was made of red cinders.
			Kaʻiwi Point	There was an abundance of <i>pili</i> grass here.
Michael Ikeda	Employee of QLT & Kona resident for 30 years	PHRI	Areas where lobsters, <i>āholehole</i> , <i>mamamo</i> and <i>ʻopelu</i> can be found	
Clarence Medeiros, Jr.	Kona kamaʻāina	PHRI	From 300 ft. elevation and below is found the endemic plant <i>Maiapilo</i> or <i>pilo</i> (<i>Capparis sandwichiana</i>)	This plant used for medicinal purposes and is vulnerable. He continues to gather <i>pilo</i> for medicinal uses.
			Sisal plant also found in Keahuolū	His father was employed by QLCC and would harvest sisal to use for thatching.
			Repaired boundary and retainer walls in 1974 during the widening and resurfacing of Palani Road from the Palani Junction to Kuakini Hwy.	
Ulialia Kaʻai-Berman	Kupuna	H.W. Smith	Keahuolū	Gathering of grasses for thatching

⁹² Kanahele 2001:30-31

SUMMARY AND RECOMMENDATIONS

The cultural impacts to any locale in Hawai'i are not always readily evident. What might be assessed by Western eyes as "barren land" may be a rich resource to Hawaiians; for example, trails would be highly valued, the land may yield harvesting material like *pili* grass, or may have spiritual aspects having to do with the wind or other natural phenomenon.

Based on previous and the current research, permanent prehistoric populations in Keahuolū appear to have been present along the coast, the midlands were used for temporary habitation and were crossed by trails linking the coast to the uplands, and the uplands were used for agricultural cultivation.

The documentary information on Keahuolū indicates several *heiau* along the coast, along with several probable permanent residential sites with enclosed yards. Sources reveal the preponderance of burials in coastal areas, and in particular in sand dunes. Further inland, caves, lava blisters and other modified features revealed human remains less frequently. Inland there are sites and features indicative of dryland agriculture substantiated by Mahele testimonies of *kalo*, potato, and limited coffee cultivation. Features indicating temporary habitation were also identified. In the upper elevations, there was a substantial increase in rock mounds, particularly faced mounds and modified lava blisters collaborating with the tradition of increased agricultural activities *ma uka*, where the moisture increases. Documentary information indicates Keahuolū was exposed to far less livestock grazing than Kealakehe to the north. The lesser grazing activity increases the likelihood of cultural sites to remain intact or to suffer less degradation.

Reviewing the information presented in this cultural impact assessment – historical documentation, archaeological surveys and research, and oral reminiscences – reveal limited cultural activities in the project area. For Keahuolu, contemporary or continuing cultural practices include gathering of ocean resources and specific plants from the 300-foot elevation seaward. One cultural practitioner has spoken of the availability and the gathering of *pili*, and in the literature are general references to features such as the wind. Halepao'o, an *'ōpelu ko'a*, is referenced at Pāwai.

Based on the findings of this assessment, the current project area development will have limited impact on Hawaiian cultural resources, beliefs, and practices. Care should be taken to preserve the habitat of endemic plants, i.e. *pilo*, *alaha'e*, *kauila*, and *uhiuhi*, in addition to preserving access for gathering activities.

Works Cited

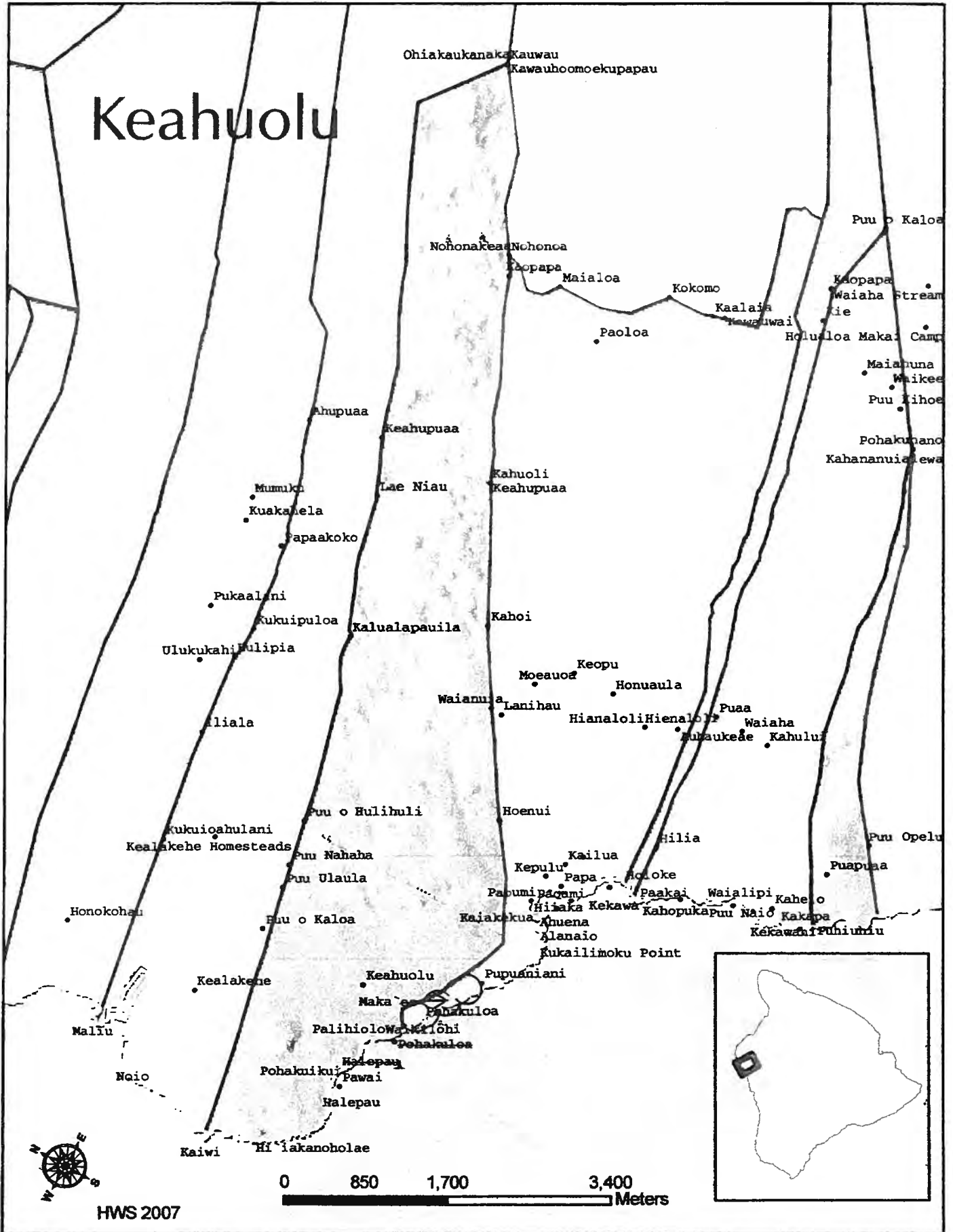
- Archaeological Research Center Hawaii, Belt, Collins and Associates, and Archaeological Research Center Hawaii. Archaeological Reconnaissance of Liliuokalani Trust Lands, Keahuolu, Kona, Hawaii Island, Lawai, Kauai, Hawaii: The Center, 1986.
- Archaeological Research Center Hawaii. Portion of Report. Archaeological Research Center Hawaii, 1978.
- Bailey, Paul. Those Kings and Queens of Old Hawaii : A Mele to their Memory. Los Angeles: Westernlore Books, 1975.
- Beckwith, Martha Warren. Hawaiian Mythology. Honolulu: University of Hawaii Press, 1976.
<<http://ulukau.org/elib/cgi-bin/library?c=beckwitl&l=en>>.
- Belt, Collins and Associates, and Liliuokalani Trust. Keahuolu Lands of Kailua-Kona : Draft Environmental Impact Statement. Honolulu: The Trust, 1990.
- . Keahuolu Lands of Kailua-Kona : Final Environmental Impact Statement. Honolulu: The Trust, 1990.
- Clark, Jeffrey T., et al. Archaeological Investigations of the Mudlane-Waimea-Kawaihae Road Corridor, Island of Hawaii : An Interdisciplinary Study of an Environmental Transect. Vol. 83-1. Honolulu, Hawaii: Dept. of Anthropology, Bernice P. Bishop Museum, 1983.
- Clark, John R. K. Beaches of the Big Island. Honolulu: University of Hawaii Press, 1985.
- . Hawaii Place Names : Shores, Beaches, and Surf Sites. Honolulu, Hawaii: University of Hawaii Press, 2002.
- Corbin, Alan B. Phased Archaeological Mitigation Program Phase II: Archaeological Data Recovery Block C, Queen Liliuokalani Trust Property, Land of Keahuolu, North Kona District, Island of Hawaii (TMK:3-7-04-08:Por.2, 12). Vol. 1483-060101. Hilo: PHRI, 2001.
- Donham, Theresa. Archaeological Inventory Survey Queen Liliuokalani Trust Property, Land of Keahuolu, North Kona District, Island of Hawaii (TMK:3-7-4-8:Por.2, 12). Hilo: PHRI, 1990.
- Ellis, William. Journal of William Ellis : Narrative of a Tour of Hawaii, Or Owhyhee : With Remarks on the History, Traditions, Manners, Customs and Language of the Inhabitants of the Sandwich Islands. Honolulu: Advertiser Publishing Co., 1963.
- Emory, K. P. Inventory of Archaeological and Historical Sites in the Districts of Kona and Ka'u and in Anaehoomali, South Kohala, Island of Hawaii. Departmental Report Series 70-12 ed. Vol. 61-1. Honolulu: Department of Anthropology, B.P. Bisho Museum, 1970.
- Estioko-Griffin, A., and G. W. Lovelace. Archaeological Reconnaissance of Old Kona Airport State Park, Kailua-Kona, Island of Hawaii (TMK 7-5-05:7). Historic Sites Section, DLNR, 1980.
- Folk, W. H. Archaeological Survey and Selective Subsurface Testing of Liliuokalani Trust Lands, Keahuolu, Kona, Hawaii Island. Vol. 14-139 II. Honolulu: Archaeological Research Center Hawaii., 1980.

- Fornander, Abraham, and Jean Charlot. Selections from Fornander's Hawaiian Antiquities and Folk-Lore. Honolulu: University of Hawaii Press, 1959.
- Fornander, Abraham. Fornander Collection of Hawaiian Antiquities and Folk-Lore ... Gathered from Original Sources. Vol. 4. Honolulu: H.I., Bishop Museum Press, 1916.
- Freycinet, L. de. "Hawaii in 1819: A Narrative Account by Louis Claude De Saulses Freycinet." Pacific Anthropological Records 26 (1978).
- Fuke, Sidney, and Virginia Goldstein. Archaeological Site no. 10-27-2000 Reconnaissance Survey, Lanihau, North Kona, Island of Hawaii, TMK:7-5-05:14 through 47, County of Hawaii Planning Department. Hilo., 1978.
- Handy, E. S. Craighill, Elizabeth Green Handy, and Mary Kawena Pukui. Native Planters in Old Hawaii: Their Life, Lore, and Environment. Vol. 233. Honolulu: Bishop Museum Press, 1972.
- Haun, Alan E. and Henry, Dave S. Archaeological Assessment TMK: (3) 7-4-015:15, Land of Keahuolu, North Kona District, Island of Hawai'i. Vol. 514-032307. Kea'au, Hawai'i: Haun & Associates, March 2007.
- . Archaeological Inventory Survey TMK: (3) 7-4-015:014, Land of Keahuolu, North Kona District, Island of Hawai'i. Vol. 514-040307. Kea'au: Haun & Associates, May 2007.
- Hawaiian Almanac and Annual for ... Honolulu: Black & AuldPrinters, 1875.
- Head, James, and Paul Rosendahl. Archaeological Mitigation Program Queen Lili'uokalani Trust Property: Phase II - Data Recovery Amendment no. 1. May ed. Vol. 1466042695. Hilo: PHRI, 1995.
- Helber, Hastert & Fee (Firm), and Hawaii. State Land Use Commission. Environmental Assessment: Urban Expansion State Lands : Keahole to Kailua Region, North Kona, Hawaii. Honolulu: The Firm, 1992.
- Hommon, Robert J., C. M. Poulton Corp, and Hawaii Marine Research, Inc. An Assessment of the Archaeological and Historic Resources of Kaunalumalu Makai, North Kona, Hawaii. Honolulu: Hawaii Marine Research, Inc., 1980.
- Jensen, Peter, and Theresa K. Donham, Paul H. Rosendahl. Archaeological Mitigation Program Queen Liliuokalani Trust Property: Phase I: Mitigation Plan for Data Recovery, Interim Site Preservation, and Monitoring. March ed. Vol. 1152-012192. Hilo: PHRI, 1992.
- Ka mo'olelo o Lae'ieikawai. 1st ed. Honolulu, Hawai'i: First People's Productions, 1997.
- Kamakau, Samuel Manaiakalani. Ruling Chiefs of Hawaii. Honolulu: Kamehameha Schools Press, 1961.
- Kame'eleihiwa, Lilikala. Native Land and Foreign Desires : How Shall we Live in Harmony?. Honolulu, HI: Bishop Museum Press, 1992.
- Kanahele, Pualani Kanaka'ole. Cultural Impact Assessment [for] Kealakehe Commercial/Industrial Park, North Kona, Island of Hawai'i for Department of Hawaiian Homes Land. Hilo., 2001.
- Kelly, M. Changes in Land Tenure in Hawaii, 1778-1850. Vol. [no. 346]. Honolulu., 1956.

- . Kekaha: 'Aina Malo'o: a Survey of the Background and History of Kaloko and Kukio, North Kona, Hawaii. Rev. ed. Vol. 71-2 [1971]. Honolulu: Dept. of Anthropology, Bernice P. Bishop Museum, 1971.
- . Na mala o Kona. Honolulu, Hawai'i : Published by the Dept. of Transportation, State of Hawaii, in cooperation with the Federal Highway Administration: U.S. Dept. of Transportation, and the Dept. of Land and Natural Resources, State of Hawaii ; Dept. of Anthropology, Bernice Pauahi Bishop Museum, 1983.
- Kinney, Henry Walsworth. The Island of Hawaii. San Francisco: Cal., Hicks, Judd co., 1913.
- Maly, Kepa, and Paul H. Rosendahl, Ph.D., Inc. Ka'ao ho'onuiua pu'uwai no Ka-Miki/the Heart Stirring Story of Ka-Miki. S.l., 1992.
- Neller, Earl, Hawaii. Division of State Parks, Outdoor Recreation, and Historic Sites. Historic Sites Section, and Hawaii. Historic Sites Section. An Archaeological Reconnaissance at the Old Kona Airport Beach Park, Keahuolu and Lanihau, Kona, Hawaii. Revis ed. Honolulu: Historic Sites Section, Division of State Parks, Department of Land & Natural Resources, 1980.
- Newman, T. Stell. Archaeological Inspection of the Old Kona Airport, 1970.
- O'Hare, C. R., and Paul H. Rosendahl. Archaeological Inventory Survey, Queen Liliuokalani Trust 100-Acre KIS Expansion Site, Land of Keahuolu, North Kona District, Island of Hawaii (TMK:3-7-4-08:Por2). Vol. 1311-011193. Hilo: PHRI, 1993.
- Pukui, Mary Kawena. Place Names of Hawaii. Rev. and enl. ed. Honolulu: University Press of Hawaii, 1974.
- Reinecke, John E. Survey of West Hawaiian Sites: From Kailua, Kona, to Kalahuipuaa, Kohala. Honolulu: Manuscript. Department of Anthropology, B.P. Bishop Museum, 1930.
- Rosendahl, Paul H., Palani Development Company, and Liliuokalani Trust. Report on a Walk-through Archaeological Survey of the Queen Liliuokalani Village, Unit 3 Tract, Keahuolu, North Kona, Hawaii: Preliminary Draft, Liliuokalani Village, Unit 3, Keahuolu, North Kona. Honolulu: Dept. of Anthropology, B. P. Bishop Museum, 1972.
- Schilt, Rose. Subsistence and Conflict in Kona, Hawai'i: An Archaeological Study of the Kuakini Highway Realignment Corridor. Honolulu, Hawai'i : Published by the Dept. of Transportation, State of Hawaii, in cooperation with the Federal Highway Administration: U.S. Dept. of Transportation, and the Dept. of Land and Natural Resources, State of Hawaii ; Dept. of Anthropology, Bernice Pauahi Bishop Museum, 1984.
- Schmitt, Robert C. Demographic Statistics of Hawaii: 1778-1965. Honolulu: U of Hawaii Press, 1968.
- Sinoto, Aki, Bernice Pauahi Bishop Museum. Dept. of Anthropology, and Belt, Collins and Associates. Archaeological Reconnaissance Survey of Proposed Access-Road Corridor at Keahuolu, Island of Hawaii. Honolulu: Dept. of Anthropology, Bernice P. Bishop Museum, 1975.
- Soehren, Lloyd J., Kilo Aina, and Affordable Homes of Hawaii. Archaeological and Historical Features on the Parcel Identified by Tax Map Key 7-4-08:Por. 1, Situated at Keahuolu, North Kona, Hawaii. Captain Cook, Hawaii: Kilo °Aina, 1983.

- . Archaeological and Historical Features on the Parcel Identified. Captain Cook, Hawaii: Kilo 'Aina, 1983.
- . Archaeological and Historical Features on the Undeveloped Portion of the Parcel Identified., 1979.
- . An Archaeological Reconnaissance Survey of Portions of Keahuolu and Lanihau Ist. North Kona, Hawaii. Captain Cook, Hawaii: S.N., 1976.
- Stokes, John F. G., and Tom Dye. Heiau of the Island of Hawaii: A Historic Survey of Native Hawaiian Temple Sites. Vol. 2. Honolulu: Bishop Museum Press, 1991.
- Tango, Tauporui, Ku'ulei Higashi Kanahale, and William Mahealani Pai. Kona Kai Ola Project: Kealakehe and Keahuolu Ahupua'a: Cultural Impact Assessment., 2006.
- Wulzen, Warren, Thomas R. Wolforth, and Leta J. Franklin. Archaeological Inventory Survey Proposed Henry Street Extension Road Corridor, Lands of Keahuolu and Lanihau, North Kona District, Island of Hawaii (TMK: 3-7-4-08:Por.1: 3-7-5-03:Por.21). Vol. 1465-092696. Hilo, Hawaii: Paul H. Rosendahl, Ph.D, Inc., September 1996.

Keahuolu



HWS 2007

0 850 1,700 3,400 Meters



Appendix E

E-1
January 2008

An Archaeological Inventory Survey for the Proposed
Development of a Water Reservoir and Service Road
(TMK:3-7-4-21:por. 014, 020, and 021)

Keahuolū and Kealakehe *ahupua'a*
North Kona District
Island of Hawai'i



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ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL STUDIES

An Archaeological Inventory Survey for the Proposed
Development of a Water Reservoir and Service Road
(TMK:3-7-4-21:por. 014, 020, and 021)

Keahuolū and Kealakehe *ahupua'a*
North Kona District
Island of Hawai'i

EXECUTIVE SUMMARY

At the request of Mary O’Leary, AICP of Belt Collins Hawaii Ltd., Rechtman Consulting, LLC has conducted an Archaeological Inventory Survey for the construction of a proposed reservoir site and associated service road within Keahuolū and Kealakehe *ahupua‘a*, North Kona District, Island of Hawai‘i. The current project area is located west of Palani Road and consists of a proposed reservoir site situated at 595 feet above sea level and an associated service road that extends west from the reservoir site. The reservoir and service road are located on undeveloped land owned by the State Department of Hawaiian Homelands and encompass an area measuring roughly 7.3 acres within a portion of parcels 014, 020, and 021 on TMK: 3-7-4-21.

As a result of the current inventory survey, four newly recorded sites and two previously recorded sites were identified. The previously recorded sites include an agricultural complex (SIHP Site 13220) and a boundary wall (SIHP Site 5011) (Donham 1990a). The newly recorded sites consist of three cairns (SIHP Sites 26395, 26396, and 26397), and a multi-feature site (SIHP Site 26398). All of the sites with the exception of Site 5011 appear to have been constructed and/or utilized during the Precontact period. SIHP Site 5011 is a core-filled boundary wall and because of its construction method was likely built during the Historic Period.

Sites 5011, 13220, 26395, 26396, 26397, and 26398 are all considered significant under Criterion D for information they have yielded relative to past use of the current project area. It is argued that the information collected during the previous and current inventory surveys is sufficient to document these sites and to mitigate any potential negative impacts resulting from the proposed development of the reservoir and service road. Therefore, no further work is recommended for these sites. It is recommended, however, that an archaeological monitor be present during the initial grubbing and grading associated with this project in an effort to insure the protection of nearby archaeological features observed during the original survey of the project area. A monitoring plan for the proposed development area should be prepared and submitted to DLNR-SHPD prior to any groundbreaking activities.

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INTRODUCTION

At the request of Mary O’Leary, AICP of Belt Collins Hawaii Ltd., Rechtman Consulting, LLC has conducted an Archaeological Inventory Survey for the construction of a proposed reservoir site and associated service road within Keahuolū and Kealakehe *ahupua‘a*, North Kona District, Island of Hawai‘i (Figure 1). The proposed service road will lead east across TMK:3-7-4-21:por. 014, 020, and 021 from an existing, unused road (Manawalea Road) to the proposed location of a reservoir site (Figure 2). At the time of the current fieldwork, the centerline of the proposed service road and reservoir site were both clearly marked in the field. Four newly recorded sites and two previously recorded sites were identified during the current survey. The previously recorded sites include an agricultural complex (SIHP Site 13220) and a boundary wall (SIHP Site 5011) (Donham 1990a). The newly recorded sites consist of three cairns (SIHP Sites 26395, 26396, and 26397), and a multi-feature site (SIHP Site 26398). The current project was undertaken in compliance with both the historic preservation review process requirements (HAR 13§13-275-5) of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) and the County of Hawai‘i Planning Department.

This report contains summary background information concerning the project area’s physical setting, cultural contexts, previous archaeological work, and current survey expectations based on the previous work. Also presented is an explanation of the project’s methods, descriptions of the archaeological features encountered, interpretation and evaluation of those resources, and treatment recommendations for sites documented within the proposed development area.

Project Area Description

The current project area is located in Keahuolū and Kealakehe *ahupua‘a*, approximately 0.37 kilometers west of Palani Road and consists of a proposed reservoir site that measures roughly 161 meters (530-feet) by 158 meters (520-feet) and an associated service road that measures roughly 15-meters (50-feet) wide and 335 meters (1,100-feet) long (see Figure 1). The reservoir and service road are located on undeveloped land owned by the State Department of Hawaiian Homelands and encompass an area measuring roughly 7.3 acres within a portion of parcels 014, 020, and 021 on TMK: 3-7-4-21 (see Figure 2). The proposed reservoir and service road are part of the off-site development of infrastructure facilities associated with the proposed Keahuolu Affordable Housing project. The project area is accessed from the west via Queen Kaahumanu Highway and then by traversing east through a construction site. There is a large (20+ meter tall) construction spoils pile encroaching on the proposed service road corridor, approximately 30 meters from the western end (Figure 3). At the time of the current fieldwork, surveyors had recently marked the centerline of the proposed service road with blue flagging tape and the five-acre area slated for the reservoir was marked with yellow flagging tape.

Elevations within the project area range from 500 to 640 feet above sea level. The proposed reservoir site is located at 595 feet above sea level. Soil in the *mauka* portion of the study area consists of Kaimu extremely stony peat (rKED) on 6 to 20 percent slopes (Sato et al. 1973). This ground surface consists of well-drained, thin organic soils over ‘*a‘ā* lava that originated from Hualālai between 1,500 and 3,000 years ago (Wolfe and Morris 1996). In the *makai* portion of the study area the land is characterized as *pāhoehoe* lava flow (rLW) with no overlying soil and originated from Hualālai 3,000 to 5,000 years ago (Wolfe and Morris 1996). Vegetation within the study area is fairly thick (Figure 4), consisting primarily of *koa-haole*, *ekoa* (*Leucaena leucocephala*), fountain grass (*Pennisetum setaceum*), *noni* (*Morinda citrifolia*), lantana (*Lantana camara*), silver oak (*Grevillea robusta*), *kiawe* (*Prosopis pallida*) and Christmas-berry (*Schinus terebinthifolius*).



Figure 1. Project area location.

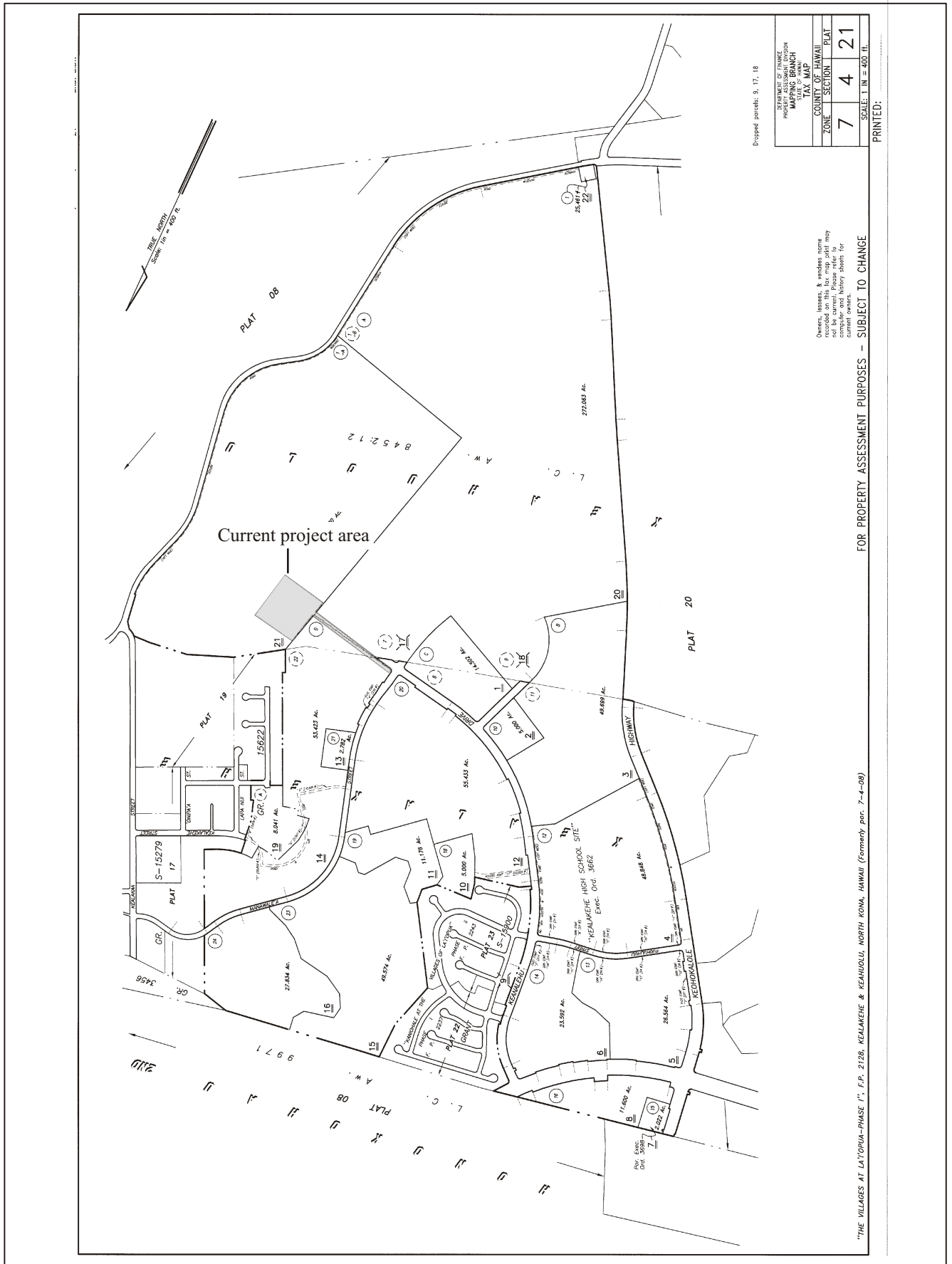


Figure 2. Tax Map Key (TMK):3-7-4-21: por. 014, 020, and 021.



Figure 3. Construction spoils pile, view to the northwest.



Figure 4. Vegetation within the project area, view to the west.

BACKGROUND

To generate a set of expectations regarding the nature of archaeological resources that might be encountered on the study parcel, and to establish an environment within which to assess the significance of any such resources, previous archaeological studies relative to the project area and a general historical context for the region are summarized.

Previous Archaeological Research

Numerous archaeological studies have been completed within Keahuolū and Kealakehe *ahupua‘a* (Table 1). These studies have included large portions of both *ahupua‘a*, mostly *makai* of the current project area. Collectively, these previous studies provide sufficient data to develop a predictive model for the current study area. The current study area has been previously surveyed by two studies (Donham 1990a and 1990b).

Table 1. Previous archaeological studies in Keahuolū and Kealakehe *ahupua‘a*.

<i>Study</i>	<i>Type of Project</i>	<i>Elevation*</i>
Stokes (1919)	Reconnaissance Survey	<40
Reinecke (1930)	Reconnaissance Survey	<40
Ladd (1968)	Site Testing	<40
Sekido (1968)	Site Testing	<40
Emory and Soehren (1971)	Reconnaissance Survey	<40
Sinoto (1975)	Reconnaissance Survey	<40
Cluff (1971)	Reconnaissance Survey	<40
Ching (1978)	Reconnaissance Survey	0-80
Soehren (1980)	Reconnaissance Survey	20-80
Soehren (1983)	Field Inspection	800-1000
Rosendahl (1983)	Reconnaissance Survey	30-200
Hammatt et al. (1987)	Inventory Survey	700-760
Walker and Haun (1987)	Reconnaissance Survey	900
Hammatt and Folk (1984)	Inventory Survey	700
Donham (1990a and c)	Inventory Survey/Addendum	600-800
Donham (1990b)	Inventory Survey	30-600
Jensen (1990)	Inventory Survey	180-580
Burgett and Rosendahl (1992)	Inventory Survey	70-700
Borthwick and Hammatt (1992)	Inventory Survey	10-75
Borthwick et al. (1993)	Reconnaissance Survey	50-90
O’Hare and Goodfellow (1994)	Data Recovery	70-700
Jensen and Head (1994)	Inventory Survey	1670-1730
Walsh and Hammatt (1995)	Inventory Survey	50-90
Rechtman et al. (2000)	Inventory Survey	1500-1600
Haun and Henry (2001)	Inventory Survey	30-85
Rechtman and Dougherty (2002)	Inventory Survey	1500-1600
Rechtman and Escott (2002)	Inventory Survey	30-80
Clark and Rechtman (2005)	Inventory Survey	575-1400
Clark et al. (2008)	Inventory Survey	1670-1710

*feet above sea level.

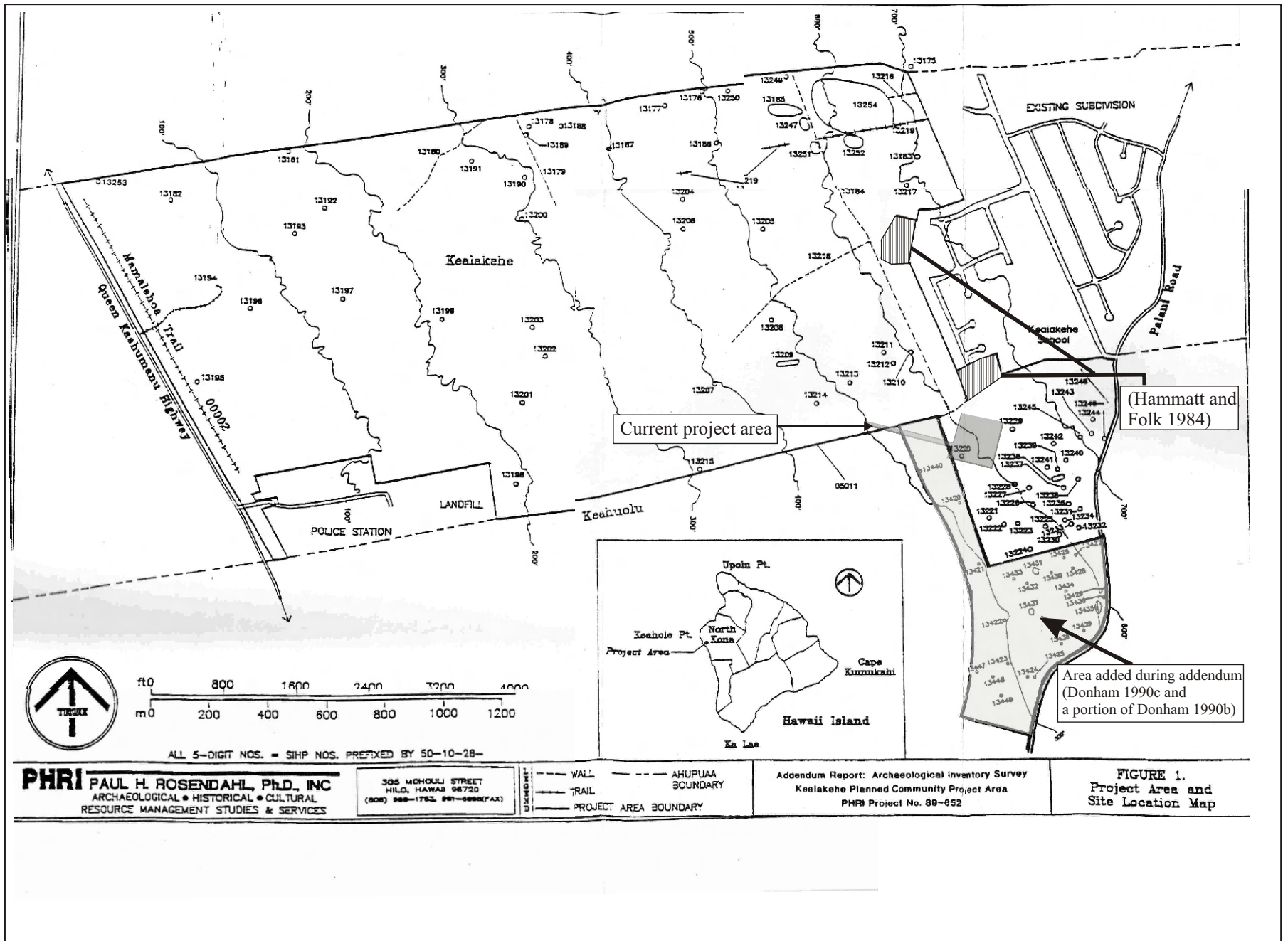
In 1989, Paul H. Rosendahl, Ph.D., Inc. (PHRI) conducted an archaeological survey of 950-acres for the proposed Kealakehe Planned Community in Kealakehe and Keahuolū *ahupua‘a* (Donham 1990a). This survey included the eastern portion of the current project area at approximately 600 feet above sea level (Figure 5). As a result of their survey, seventy-eight new sites were identified and recorded and four sites previously identified by Hammatt et al. (1987) were relocated. 840 individual feature types were recorded within eight functional categories. The categories of site function included: agricultural, habitation, transportation, possible ceremonial, agricultural/habitation, indeterminate marker, land division/ranching, and possible burial. Within these site categories, the features present were indicative of Precontact

agricultural use with Historic Period additions: rock mound (n=350), *pāhoehoe* excavation (n=258), terrace (n=73), modified outcrop (n=46), cairn (n=26), enclosure (n=22), wall (n=18), platform (n=16), steppingstone trail (n=11), pavement (n=5), kerbstone trail (n=5), cave (n=3), hearth (n=2), trail (n=2), c-shape (n=1), midden scatter (n=1), and roadbed (n=1). Of the eighty-two sites located within their survey, fifty-three were located within Kealakehe Ahupua‘a, twenty-eight in Keahuolū Ahupua‘a and one site within both (a boundary wall). The survey concluded that the area was intensively used for agriculture. Following this survey, PHRI wrote an addendum (Donham 1990c) in which 52 acres that were previously surveyed by an earlier report (Donham 1990b) were reinvestigated. This area of 950-acres was surveyed again by PHRI (Burgett and Rosendahl 1992).

Between 1989 and 1990, PHRI conducted an archaeological inventory survey of 1,100-acres within Keahuolū Ahupua‘a (Donham 1990b). The western end of the proposed service road investigated during this current study passes through this project area (see Figure 5). As a result of their survey, 239 sites were recorded of which two were previously assigned SIHP numbers (SIHP Site 0002 Mamalahoa Trail, and SIHP Site 7276 Kuakini Wall). Within the 239 sites located during their survey, more than 1,810 individual features were recorded. The predominant feature types were *pāhoehoe* excavations, mounds, modified blisters and outcrops. Other feature types included terraces, low platforms, c-shapes, enclosures, and walls. Approximately 85-90% of the features recorded were interpreted as agricultural in function. Donham (1990b) found that feature density was greater at 400 feet above sea level and higher. Feature types found at 400 feet above sea level and higher included: mound (n=139), *pāhoehoe* excavation (n=132), modified blister (n=34), terrace (n=29), modified outcrop (n=27), enclosure (n=18), cairn (n=17), cave (n=17), platform (n=14), faced mound (n=11), pavement (n=9), alignment (n=7), wall (n=7), trail (n=6), petroglyph (n=3), c-shape (n=2), other (n=2), filled crevice (n=1), linear mound (n=1), and overhang (n=1). None of the sites recorded during the Donham (1990b) survey are located within the current project area. The addendum to the Donham (1990a) survey re-investigated a portion of this survey done by Donham (1990b) and provided insight into the differences in land use occurring between Kealakehe and Keahuolū *ahupua‘a*.

In 1990, PHRI produced an addendum (Donham 1990c) to their previous archaeological inventory survey done for the proposed Kealakehe Planned Community in Kealakehe and Keahuolū *ahupua‘a* (Donham 1990a) (see Figure 5). The addendum report re-investigated 53 acres originally surveyed by PHRI between 1989 and 1990 in which 24 new sites including 279 features were recorded (Donham 1990b). As a result of the addendum report, differences in land use between Kealakehe and Keahuolū *ahupua‘a* were obtained. Donham (1990c) found that more features, mainly agriculturally related, were present in Keahuolū than Kealakehe due to location (ie. rainfall patterns) and a former sisal plantation and mill operations. The location of the Kuakini Wall within Keahuolū Ahupua‘a suggested the presence of either politically important or relatively concentrated residential sites in association with Kailua town (Donham 1990c: 43 and 44). Although Kealakehe Ahupua‘a was found to have a greater range of functional site types, the use of the area for cattle ranching was likened to have impeded preservation of sites and features, resulting in the variations found between Kealakehe and Keahuolū *ahupua‘a*.

The earliest archaeological surveys conducted in the region generated brief descriptions of major coastal sites (Stokes 1919, Reinecke 1930). In 1906 Stokes documented Laupauwila Heiau (Bishop Museum Catalogue: 50-Ha-D11-28) in Kealakehe Ahupua‘a and provided the following description: “Heiau of Laupauwila, land of Kealakehe, North Kona. Said to be on the ‘elemakule homestead. Grant No. 3756, 3.5 miles from the sea” (Stokes and Dye 1991:40). In the late 1920s Reinecke conducted an archaeological inventory of the coastal areas from Kona to Kohala. He documented twelve sites each in the coastal portions of Kealakehe and Keahuolū *ahupua‘a*. The Kealakehe sites included residential platforms and house yards, Hale o Lono Heiau (Site 33), and an unidentified *heiau* (Site 35). The Keahuolū sites included 41 platforms and 12 enclosures mostly interpreted as house sites, several petroglyphs (Site 20), two modified pools (Sites 12 and 17), three burials (Sites 12, 13, and 19), and a canoe landing (Site 14).



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RC-0525

Figure 5. Slightly modified Donham 1990c site map with the survey locations of Hammatt and Folk (1994), Donham 1990a and 1990b and the current project area.

During the 1960s and 1970s, increased coastal development within the Kailua area created a need for further archaeological study at the sites previously recorded by Reinecke (1930). As a result of the continuing development of Honokōhau Harbor, excavations were carried out at three of the Kealakehe sites recorded by Reinecke (Ladd 1968; Sekido 1968). These sites included a house platform, a habitation cave, and a burial. Also, Sinoto (1975) conducted an additional reconnaissance on 100 acres located just inland of Honokōhau Bay, identified three previously recorded sites, but recommended no further archaeological work in the area.

In the early 1960s Emory (Emory and Soehren 1971) conducted an archaeological reconnaissance of the coastal areas of Honokōhau I and II, Kealakehe, and Kaloko *ahupua'a*. A total of 27 sites were recorded in Kealakehe Ahupua'a. The documented sites included ten house sites, ten burial sites, three enclosures, two *heiau* (both previously identified by Reinecke), and two indeterminate sites. In addition, a "modern" graveyard was documented that reflected both traditional Hawaiian and European burial practices. The report suggests that the Honokōhau Bay area, including its fishponds, ceremonial *heiau*, *holua*, and residential complexes, was a primary locus of political and ceremonial activity along the northern Kona coast. A study by Cluff (1971) supplemented the reconnaissance by Emory and Soehren by expanding the survey area coverage, and provided significance evaluations and treatment recommendations for the identified sites.

Ching (1978) conducted a reconnaissance survey of coastal Keahuolū Ahupua'a between the shore and Queen Ka'ahumanu Highway (987 acres). As a result of the survey Ching identified fifty-nine sites containing 140 distinct features that included twenty-nine salt pans, twenty-one pavements, and twenty-one cairns. Nine of these sites had been previously identified by Bevacqua (1972) and seven had been previously identified by Sinoto (1975).

All of these early archaeological studies suggest a pattern of coastal settlements near fishponds and rich marine resources with a decrease in permanent habitation sites and an increase in agricultural features further inland. Beginning in the late 1970s numerous studies were conducted in *mauka* portions of Kealakehe and Keahuolū *ahupua'a*. These studies documented the presence of numerous agricultural features associated with the upland field systems in the two *ahupua'a* and documented the formal feature types that occur in the Middle Zone (roughly 15 to 800 or 900 feet above sea level) of between the coastal zone and the upland agricultural zone.

Soehren (1980) surveyed a 40-acre parcel and an access corridor for a proposed wastewater treatment plant in coastal Kealakehe at an elevation between 35 and 240 feet above sea level. One trail, SIHP 7704, was documented during the survey. Soehren believed this trail connected Aimakapa Pond, in Honokōhau, with a small settlement at Pawai Bay, in northern Keahuolū (Soehren 1980).

Soehren (1983) surveyed a 10-acre parcel in upper Keahuolū Ahupua'a at elevations ranging from 800 to 1,000 feet above sea level to the east of the Queen Liliuokalani Village subdivision. Soehren did not locate any sites or features. He noted that, "Such land appears suited only for arboreal crops, such as paper mulberry, if any", and that "no evidence was found of traditional agricultural structures such as kuaiwi, clearing mounds or terraces, nor were there any other features attributed to prehistoric Hawaiian culture seen on the parcel" (Soehren 1983).

Rosendahl (1983) conducted a reconnaissance survey of three separate areas within Keahuolū Ahupua'a. The areas included 100 acres west of Queen Ka'ahumanu Highway along the southern boundary of the *ahupua'a*, 100 acres east of the highway along the southern edge of Palani Road, and 12 acres along the northern edge of Palani Road and the southern edge of the *ahupua'a*. Rosendahl (1983) identified two large site complexes and five additional sites, but did not record them in detail. He recommended that intensive survey of all three areas be conducted.

Walker and Haun (1987) conducted a reconnaissance survey in Kealakehe Ahupua'a of a roughly half-acre parcel at an elevation of 900 feet above sea level. They recorded a single agricultural/habitation complex with eight features. Hammatt and Folk (1984) surveyed a 24-acre parcel along the south boundary of Kealakehe Ahupua'a at about 700 feet above sea level and found no archaeological sites, but they did note heavy mechanical disturbance had occurred on the property.

In 1987, Hammatt et al. (1987) conducted an inventory survey north of the current project area on a 15-acre parcel located between 700-760 feet above sea level in Kealakehe Ahupua'a. The project identified thirty-two features, seventeen of which were subjected to test excavations. Twenty-five of the features were interpreted as agricultural; the remaining fifteen were considered habitation features. The habitation features were further interpreted as "field hale" and were assigned to the late Precontact Period based on the results of a single radiocarbon date (A.D. 1645-1950). The report described the agricultural features as being part of the Kona Field System, but distinct from the typical dryland fields originally described (Soehren and Newman 1968) for the complex. The features they recorded are less formally arranged and exhibit adaptation to the particular environmental conditions of the area. Prior to testing, these features were considered possible burials. No human remains were discovered during testing and the features were interpreted as agricultural clearing mounds.

Between 1989 and 1992, PHRI conducted an archaeological inventory survey and mitigation program on a 950-acre area for the Kealakehe Planned Community (Burgett and Rosendahl 1992; O'Hare and Goodfellow 1994). Donham (19990a) also surveyed this area. The project area spanned the width of the *ahupua'a* and extended from 70 to 700 feet above sea level. Forty-four previously unidentified sites were intensively recorded and were recommended for no further work (Burgett and Rosendahl 1992). Feature types included agricultural, habitation, possible ceremonial and burial features, trails, storage and marker features, and boundary walls. The recording and excavation of sites within all elevational zones enabled the investigators to prepare a synthesis of settlement and land use patterns for the *ahupua'a* below 800 feet above sea level. Above approximately 600 feet above sea level the density and formal nature of the agricultural features increased, suggesting that this elevation marked "the lower boundary of a distinct agricultural zone" (O'Hare and Goodfellow 1994:87). They also noted an increase in permanent habitation sites beginning at about 740 feet above sea level, which was further reinforced by the *Māhele* data for Kealakehe Ahupua'a.

In 1990, PHRI conducted an inventory survey for improvements to Palani Road within Keahuolū Ahupua'a (Jensen 1990). The project area consisted of a 50-foot wide corridor that stretched along the southeastern edge of Palani Road from elevations of 180 to 580 feet above sea level. As a result of the survey Jensen recorded thirty-two sites containing forty-four features. The majority of the features (n=30) including mounds, walls, terraces, enclosures, and modified outcrops were determined to be related to agriculture/boundary. One of the boundary features was the Kuakini Wall. Thirteen of the remaining features including one small cave, five modified outcrops, and seven enclosures were determined to have been used for Precontact temporary habitation purposes. In addition to these features, one sealed lava tube contained a drilled conch shell. Jensen (1990:14) concluded that the cave had been sealed for the sole purpose of caching this artifact and was not used for any other purpose.

Cultural Surveys Hawaii (Borthwick and Hammatt 1992) conducted an inventory survey of a 22-acre corridor in Keahuolū and Kealakehe *ahupua'a* at elevations ranging between 10 and 75 feet above sea level. The survey covered an area that stretched across Keahuolū Ahupua'a in its entirety and continued into a small portion of southern Kealakehe Ahupua'a. Fourteen archaeological sites or complexes were recorded. Identified sites included temporary habitations in lava blisters and sinks, *pāhoehoe* excavations, two caves, and one Historic Period clearing mound.

In 1993, Cultural Surveys Hawaii (Borthwick et al. 1993) completed a reconnaissance survey of an area along both sides of Queen Ka'ahumanu Highway in Kealakehe Ahupua'a. During that survey a single site was recorded. The site was situated near the intersection of the highway and the road to Honokōhau Harbor. During a more recent Haun and Associates survey (Haun and Henry 2001) this site could not be relocated.

In 1994, PHRI conducted an inventory survey of two alternate reservoir sites on land own by the Queen Liliuokalani Trust at elevations ranging from 1,670-1,730 feet above sea level within Keahuolū Ahupua'a (Jensen and Head 1994). PHRI had previously conducted a field inspection of the access road leading from Mamālahoa Highway and the location of Keahuolū Well Site No. 1, which led to the selection of a development area that did not impact and archaeological features (Rosendahl 1993). The reservoir survey resulted in the identification of five sites containing a total of thirty-one features (Figure 6). The recorded sites included an agricultural complex containing four walls (Site 19688), a linear mound interpreted as

being used for temporary habitation (Site 19689), a cairn (Site 19690), a platform of undetermined function (Site 19691), and an agricultural complex containing twenty-four features including mounds, modified outcrops, terraces, walls, and retaining walls (Site 19692).

In 1995, Cultural Surveys Hawaii (Walsh and Hammatt 1995) conducted an inventory survey for the new Queen Ka'ahumanu Highway between Palani Road and Keahole Airport that crossed several *ahupua'a*. This area had been previously subject to a reconnaissance survey conducted by Borthwick et al. (1993). As a result of these surveys two sites a stepping stone trail running in a *mauka/makai* direction within Kealakehe Ahupua'a was recorded as well as the Old Māmalahoa Trail that crosses both Kealakehe and Keahuolū *ahupua'a* as it parallels the highway alignment.

In 2000, Rechtman Consulting, LLC conducted an inventory survey in the *mauka* portion of Kealakehe Ahupua'a above Māmalahoa Highway at elevations ranging between 1,480 and 1,600 feet above sea level (Rechtman et al. 2000). They recorded six sites: four Historic Period walls and two Precontact agricultural complexes. Combined these two sites contained 41 features typical of Kona Field System sites in the 'apa'a or Upland Zone. The *mauka* boundary of the parcel was the Old Upper Government Road between Kailua and Waimea (Site 22431).

In 2001, Haun and Associates conducted an inventory survey of approximately 200 acres in Kealakehe Ahupua'a at elevations ranging from 30 to 85 feet above sea level for PBR Hawaii and the Department of Hawaiian Homelands (Haun and Henry 2001). A total of 123 archaeological features separated into fifty-six sites were recorded on the parcel. The sites consisted of ten formal feature types including *pāhoehoe* excavations, stone alignments, cairns, mounds, petroglyphs, trails, enclosures, caves, overhangs, and platforms. Two previously recorded sites extended into their survey area, including a trail route (SIHP 7704) recorded by Soehren in 1980, and a second trail route (SIHP 13194) recorded by Borthwick et al. (1993).

In 2002, Rechtman Consulting, LLC conducted an inventory survey (Rechtman and Dougherty 2002) of a property adjacent to the Rechtman et al. (2000) study area in Kealakehe Ahupua'a. One archaeological site (SIHP 23274) consisting of 79 features was identified. All of the features were related to a single residence that existed on the property from the 19th to 20th centuries. Features recorded at the site included: walls, agricultural modifications, trail and road alignments, a corral, a concrete mausoleum, and features associated with both landowner and laborer residential activities. The *mauka* boundary of that parcel was also the Old Upper Government Road (Site 22431).

Also in 2002, Rechtman Consulting, LLC (Rechtman and Escott 2002) conducted an inventory survey of a roughly 40-acre area located at elevations ranging from 30 to 80 feet above sea level in Kealakehe Ahupua'a along the *makai* edge of Queen Ka'ahumanu Highway. As a result of that study five sites were recorded with features including a C-shaped enclosure, three *pāhoehoe* excavations, a collapsed lava blister used for temporary habitation purposes, three trail segments, two cairns (one modern), and a habitation area within a lava tube.

In 2005, Rechtman Consulting, LLC conducted an inventory survey (Clark and Rechtman 2005) of a corridor for the proposed construction of a transmission main water line and a new water tank within Kealakehe and Keahuolū *ahupua'a* at elevations ranging from 575-1,400 feet above sea level. The project area consisted of a twenty to fifty-foot wide corridor that stretched from Māmalahoa Highway to two existing water tanks along Palani Road. As a result of the survey seven archaeological sites were recorded including the continuation of a core-filled wall previously recorded by Jensen (1990) paralleling Palani Road (Site 14239), a Historic boundary wall (Site 24853), a Historic residence (Site 24854), a series of Historic wall segments (Site 24855), and three sites related to Precontact/Historic agriculture that were recorded (but not formerly reported on) during inventory fieldwork conducted by Rechtman Consulting, LLC at TMK:3-7-4-09:72 (Sites RC-0161-1, RC-0161-19, and RC-0161-29). All of the recorded sites provided evidence for the Historic Period use of the general project area. Clark and Rechtman note that the intensive residential/agricultural use of the area following the late nineteenth and early twentieth century granting programs obliterated or obscured much of evidence of the earlier Precontact land use.

In 2007, Rechtman Consulting, LLC conducted an inventory survey (Clark et al. 2008) for the proposed Keahuolū Well Site No. 2 and an access road leading to that site, both of which were located *mauka* of the current study and the Māmalahoa Highway within Keahuolū Ahupua‘a. As a result of their survey four archaeological sites were recorded including a wall (SIHP Site 26271), two mounds (SIHP Sites 26272 and 26274), and an alignment (SIHP Site 26273). Sites 26271 and 26272 were determined agricultural features used during the Precontact or early Historic Period and Sites 26273 and 26274 appeared to represent later Historic use of the area. No further work was the recommendation on all of these sites.

Cultural-Historical Context and Ahupua‘a Settlement Patterns

The current project area is located in the *ahupua‘a* of Keahuolū and Kealakehe within the zone of formal agricultural fields commonly referred to as the Kona Field System (Cordy 1995; Haun and Henry 2001; Newman 1970; Schilt 1984). A land use and settlement pattern model applicable to the current study area was presented by Cordy et al. (1991) for nearby Kaloko Ahupua‘a. This model delineates four environmental zones within the *ahupua‘a*: the Coastal Zone from shoreline to 15 feet elevation, the Middle Zone from 15 to 800-900 feet elevation, the Lower Upland Zone from 900 to 1,500 feet, and the Upland-Forest Zone between 1,500 and 6,000 feet elevation. The current project area is within the Middle Zone and Lower Upland Zone. According to Cordy et al. (1991) these zones represent a transitional area between the coastal habitation zone and the upland agricultural zone.

The Kona Field System and its development are significant to understanding the cultural contexts of the project area because agricultural elements characteristic to the Kona Field System did exist in the *mauka* portion of Kealakehe (Hammatt et al. 1987; Haun and Henry 2001; Rechtman and Dougherty 2002; Rechtman et al. 2000). *Māhele* documents and previous archaeological studies identify Kona Field System agriculture sites in the *kalu‘ulu* zone (500 to 1,000 feet elevation) beginning at an elevation of 900 feet and in the *apa‘a* zone (1,000 to 2,500 feet elevation).

While the archaeological record contributes to an understanding of how the Kona Field System developed over time, precisely how the record is interpreted is reflected in the various chronologies proposed for the system (Burtchard 1995; Cordy 1995; Haun et al. 1998; Hommon 1986; Kirch 1985; Schilt 1984). The chronology and terminology outlined by Haun et al. (1998) is used in the present discussion, and the chronological summary below is abstracted from Rechtman et al. (1999).

There is little archaeological evidence for permanent settlements in the Kona region throughout the first half of the Early Expansion Period of Hawaiian history (A.D. 600 to 1100) (Burtchard 1995; Hommon 1986; Kirch 1985). Although permanent habitation was still concentrated on the windward side, it is likely that windward residents may have traveled to the Kona coast to obtain needed resources (Cordy 1995). By the latter half of the Early Expansion Period, permanent settlements were established in Kona along the coast and on lowland slopes, and informal fields were likely established at higher elevations (Cordy 1981; Cordy 1995; Schilt 1984).

An archaeological study by Cordy et al. (1991) along a coastal portion of nearby Kaloko Ahupua‘a suggests this area was settled between A.D. 900 and 1200. Radiocarbon data from archaeological studies within the *ahupua‘a* of Kealakehe indicate initial human activity in this region in the 1200s to 1300s, a gradual increase between the 1400s and 1500s, followed by more intensive activity from the 1600s to early Historic Period (Haun and Henry 2001).

Agricultural fields and habitation areas expanded across the slopes and coastal area of Hualālai during the Late Expansion Period (A.D. 1100 to 1400) (Burtchard 1995; Cordy 1995). Walled agricultural fields, planting mounds, and temporary habitations were established at the higher elevations that received greater amounts of rainfall.

The development of the extensive formal walled fields sometime during the initial stages of the Intensification Period (A.D. 1400 to 1600) marks the initiation of the Kona Field System (Schilt 1984). The development of these fields may have been, in part, a by-product of the need to extract more subsistence resources from an increasingly limited agricultural base. Radiocarbon data indicates that the population in Kona increased dramatically during this period (Burtchard 1995; Haun et al. 1998; Schilt 1984).

By the time of the Competition Period (A.D. 1600 to 1800), the environment may have reached its maximum carrying capacity, resulting in social stress between neighboring groups. The resulting hostility is reflected archaeologically by the frequent occurrence of refuge caves dating to this period (Schilt 1984). This volatile period was probably accompanied by internal rebellion and territorial annexation (Hommon 1986; Kirch 1985).

During the first of the defined historic periods (Haun et al. 1998), Last of the Ruling Chiefs (A.D. 1778-1819), Kalaniopu'u was chief of the Island of Hawai'i and often resided in the Kona District. This period covers Kamehameha's consolidation of control over the island to his death at Kailua in 1819. The period ends with the overthrow of the old religion, which took place when Liholiho, Kamehameha's heir, broke the traditional *kapu* laws and won a battle against the supporters of the old religion at Kuamo'o, along the southern coastline of Keauhou. Early historical accounts emphasize that modern day Kailua Town during this period was a significant political seat and population center. The Kona Field settlement and subsistence system continued to operate in the area through the first few decades of the historic era (Handy and Handy 1972).

William Ellis, one of the first missionaries to arrive on the Island of Hawai'i, visited the area above Kailua (likely in the vicinity of the current project area) on a tour around the island in 1825. Ellis' description of what the upland fields looked like at this time:

After traveling over the lava for about a mile, the hollows in rocks began to be filled with a light brown soil; and about half a mile further, the surface was entirely covered with a rich mould, formed by decayed vegetation and decomposed lava. Here through a beautiful part of the country, quite a garden compared with that through which they had passed, on first leaving town. It was generally divided into small fields, about fifteen rods square, fenced with low stone walls, made of fragments of lava which had been gathered from the surface of the enclosures. These fields were planted with bananas, sweet potatoes, mountain taro, tapa trees, melons, and sugar cane, flourishing luxuriantly in every direction. Having traveled about three or four miles through this delightful region, and passed several pools of fresh water, they arrived at the thick woods, which extends several miles up the sides of the lofty mountain that rises immediately behind Kairua. (1963:27-28)

The second quarter of the 19th century, the Merchants and Missionaries Period (A.D. 1820-1847), was a time of profound social change in Hawai'i. Kamehameha I died in mid-1819, and a council of chiefs supported Kamehameha's son Liholiho as successor (Kelly 1983). Liholiho gained the council's support in exchange for the distribution of the profits from the sandalwood trade and the bounty of the land that moved up the hierarchy from the various *ahupua'a* under his control; privileges previously retained solely for the ruler. Within six months after Kamehameha's death, Liholiho, Ka'ahumanu, and Queen Keopuolani broke the *kapu* prohibiting men and women eating together. This act of "free eating" symbolized the end of the traditional *kapu* system. The changes in social and economic patterns began to affect the lives of the common people. Liholiho moved his court to O'ahu, so the burden of resource procurement for the chiefly class lessened considerably. However, some of the work of the commoners shifted from subsistence agriculture to the production of foods and goods for trade to the early Western visitors. Introduced crops, such as yams, coffee, melons, Irish potatoes, Indian corn, beans, figs, oranges, guavas, and grapes (Wilkes 1845) were grown specifically for trade with Westerners. Other commodities, especially sandalwood, were collected to purchase Western goods, often to the detriment of agricultural pursuits. The arrival of the missionaries to Hawai'i in the 1820s brought further changes to the social and religious systems of the islands.

The socioeconomic and demographic changes that took place in the period between 1790 and the 1840s, promoted the establishment of a Euroamerican style of land ownership, and the *Māhele* was the vehicle for determining ownership of the native land. During this Legacy of the Great *Māhele* Period (1848-1899) (Haun et al. 1998), the *Māhele* defined the land interests of the King (Kamehameha III), the high-ranking chiefs, and the low-ranking chiefs, the *konohiki*. The chiefs and *konohiki* were required to present their claims to the Land Commission to receive awards for lands provided to them by Kamehameha III. They were also required to provide commutations to the government in order to receive royal patents on their awards. The lands were identified by name only, with the understanding that the ancient boundaries would prevail until the land could be surveyed. This process expedited the work of the Land Commission and speeded the transfers (Chinen 1961:13). During this process all lands were placed in one of three categories: Crown Lands (for the occupant of the throne), Government Lands, and *Konohiki* Lands. All three types of land were subject to the rights of the native tenants. In 1862, the Commission of Boundaries (Boundary Commission) was established in the Kingdom of Hawai'i to legally set the boundaries of all the *ahupua'a* that had been awarded as a part of the *Māhele*. Subsequently, in 1874, the Commissioners of Boundaries was authorized to certify the boundaries for lands brought before them. The primary informants for the boundary descriptions were old native residents of the lands, many of which had also been claimants for *kuleana* during the *Māhele*. The information was collected primarily between A.D. 1873 and 1885. The testimonies were generally given in Hawaiian and simultaneously transcribed in English.

As a result of the *Māhele*, the *ahupua'a* of Keahuolū was awarded in its entirety to Ane Keohokālōle as part of LCAw. 8452. Ane Keohokālōle was the great granddaughter of Kame'eiamoku, one of the most important chiefs who supported Kamehameha I (Kelly 1983:31). Keohokālōle was married to Kapa'akea and they were the parents of King (David) Kalākaua and Queen (Lydia Kamaka'eha) Lili'uokalani. Their youngest son, William Pitt Leleiohoku, was adopted at birth by Ruth Ke'elikōlani, the governess of Hawai'i Island from 1855 to 1874, and named for her first husband; their youngest daughter, Miriam Likelike, was the mother of Ka'iulani, who was proclaimed heir apparent in 1891 after Queen Lili'uokalani took the throne following the death of her brother King Kalākaua (Kelly 1983:31).

Six *kuleana* claims were awarded in Keahuolū *Ahupua'a*, five in the uplands (all southeast of the current project area and *mauka* of Mamalahoa Highway) and one at the coast. Four of the claims in Keahuolū describe the cultivation of taro, one mentions sweet potato, and one mentions coffee; no house lots are mentioned in the claims. The awardee at the coast claimed seven fan palms and a coconut grove, and described the land as salt land that still yielded salt (Jensen 1990:A-4). Kepā Maly (in Jensen and Head 1994) offers the following excerpts from the *Māhele* records pertaining to the *ahupua'a* of Keahuolū:

Kahuanui - LCA 7351 for 2.90 acres (Foreign Test. 8:682) ... one piece of *kalo* [taro] land, 5 patches-all lying together. One of these patches is planted with coffee. Claimant received this land from his brother in 1846, and his title has never been disputed.

'Apiki - LCA 8012 for 1.10 acre (Foreign Test. 8:676) It consists of 5 patches of *kalo* and a lot of patches of potatoes ... Claimant derived the land from the *Konohiki*, before the death of Kuakini [c. 1840].

Hailewalewa- LCA 10198 for 1.30 ac (Native Test. 4:525) Section 1, *kalo*; Section 2, in the *kalu'ulu* ...

Ma'a - LCA 10303 for 2.25 acres (Native Test. 4:526) There are 11 *kīhāpai* [gardens] *ofkalo*, and 10 *klhapai* of '*uwala* [sweetpotatoes] ... That land is not completely cultivated but, Ma'a did plant 7 *loulou* (*Pritchardia* palm) trees. The fruit is for Samuela, both Ma'a and Samuela have joint interest in the 7 *loulou*. There is also a coconut grove which had been planted by Ma'a's grandparents for the chiefs who owned the land, his grandparents were the caretakers. The coconuts went to Keohokalole upon the death of Keoua (c.1791). One whole section is salt land and it is still yielding salt...received during the time of Kamehameha I.

Naha'alu'alu - LCA 10345 for 2 acres (Native Test. 4:527) includes 4 sections of *kīhāpai* ...

Aki - LCA 11071 for .60 acres (Native Test. 4:527) Section 1, 5 *kīhāpai*; section 2, 1

kīhāpai not cultivated; section 6, 4 cultivated *kīhāpai*. Section 7, 1 cultivated *kīhāpai* ...
From the time of Kamehameha I. (Jensen and Head 1994:17)

In a letter dated July 8, 1869, David Kalākaua describes the land of Keahuolū and its possible uses to his sister Lydia Kamaka'eha (Lili'uokalani):

This land is situated in the District of North Kona. Bounded by the ahupuaa of Lanihau (in Kailua) belonging to Prince Lunalilo on the Ka'u side, and on the Kohala side, by Kealakehe, a government land and Honokoniki belonging to Keelilkolani. Keahuolu runs clear up the mountains and includes a portion of nearly one half of Hualalai mountains. On the mountains the koa, kukui and ohia abounds in vast quantities. The upper land or inland is arable, and suitable for growing coffee, oranges, taro, potatoes, banana & c. Breadfruit trees grow wild as well as Koli oil seed. The lower land is adopted for grazing cattle, sheep, goat, &c. The fishery is very extensive and a fine grove of cocoanut trees of about 200 to 300 grows on the beach. The flat land near the sea beach is composed chiefly of lava, but herbs and shrubbery grows on it and [it is] suitable for feed of sheep and goats. It is estimated at 15,000 to 20,000 acres or more. (Jensen 1990:A-4)

Kealakehe Ahupua'a was designated government land. There were eleven *kuleana* land claims made within Kealakehe Ahupua'a, all located east of the current project area at elevations ranging between 1,000 and 1,500 feet above sea level. Native testimony shows that the native residents were claiming land used for farming taro, sweet potato, banana, and there were at least ten houses, including some that were fenced in (Donham 1990a:Appendix B).

Following the *Māhele*, and the Homestead Act of 1884, the upper portion of Kealakehe Ahupua'a was subdivided and sold as grants (Haun and Henry 2001:9). This area was referred to as the Kealakehe Homesteads (Figure 6). Historic land use of these parcels likely included residential, diversified agriculture, and cattle ranching. The *mauka* boundary of the Kealakehe Homesteads was the Upper Government Road (*Alanui*), which was the primary route of travel between Kailua and Waimea prior to the construction of the Kona Belt Road in 1933 and the current alignment of the Mamālahoa Highway in 1956 (Rechtman and Henry 1998). In Figure 6 this road is shown as a walled alignment *makai* of Grant 1571 within Kealakehe Ahupua'a, and as a dashed line running into Keahuolū Ahupua'a. It is likely that at the time the grant parcels were subdivided, near the end of the nineteenth century, walls were built along either side of the Upper Government Road. It was at this time that many grant increment roads were established to allow the homesteaders access to their parcels (Clark and Rechtman 2005).

A short lived, but interesting agricultural pursuit began in Hawai'i in 1893. It was in this year that the Hawaiian Commissioner of Agriculture and Forestry ordered 20,000 sisal plants from Florida (Conter 1903:11). It appears that at some later point, likely in the early 20th century, a sisal mill, used to process the raw sisal into fibers, was constructed by McWayne in Keahuolū Ahupua'a along Palani Road southwest of the current project area. Kelly (1983:89) relates that Kona was naturally adapted to the cultivation of sisal, and that depending on the terrain, anywhere between 500 to 1,000 plants could be grown on an acre. Thrum (1905:181) reported that the "McWayne sisal tract consisted of about 500 acres at or near Kailua". Jensen (1990:A-5) reports that the first crop from the McWayne Estate did not reach Honolulu until 1918. Mr. Minoru Inaba, who worked at the mill from 1920-21, stated that the mill was owned by Luther S. Aungst from 1917 until its closure in 1924 (in Jensen 1990:A-5). Mr. Inaba recalled that over a thousand acres were in cultivation in Kealakehe and Keahuolū *ahupua'a* surrounding the mill along Palani Road. Workers would harvest the plants in the field and then bundle and transport them to mill by donkey where they were thrashed, dried, and baled before being sent to San Francisco on steamers (Jensen 1990:A-5).

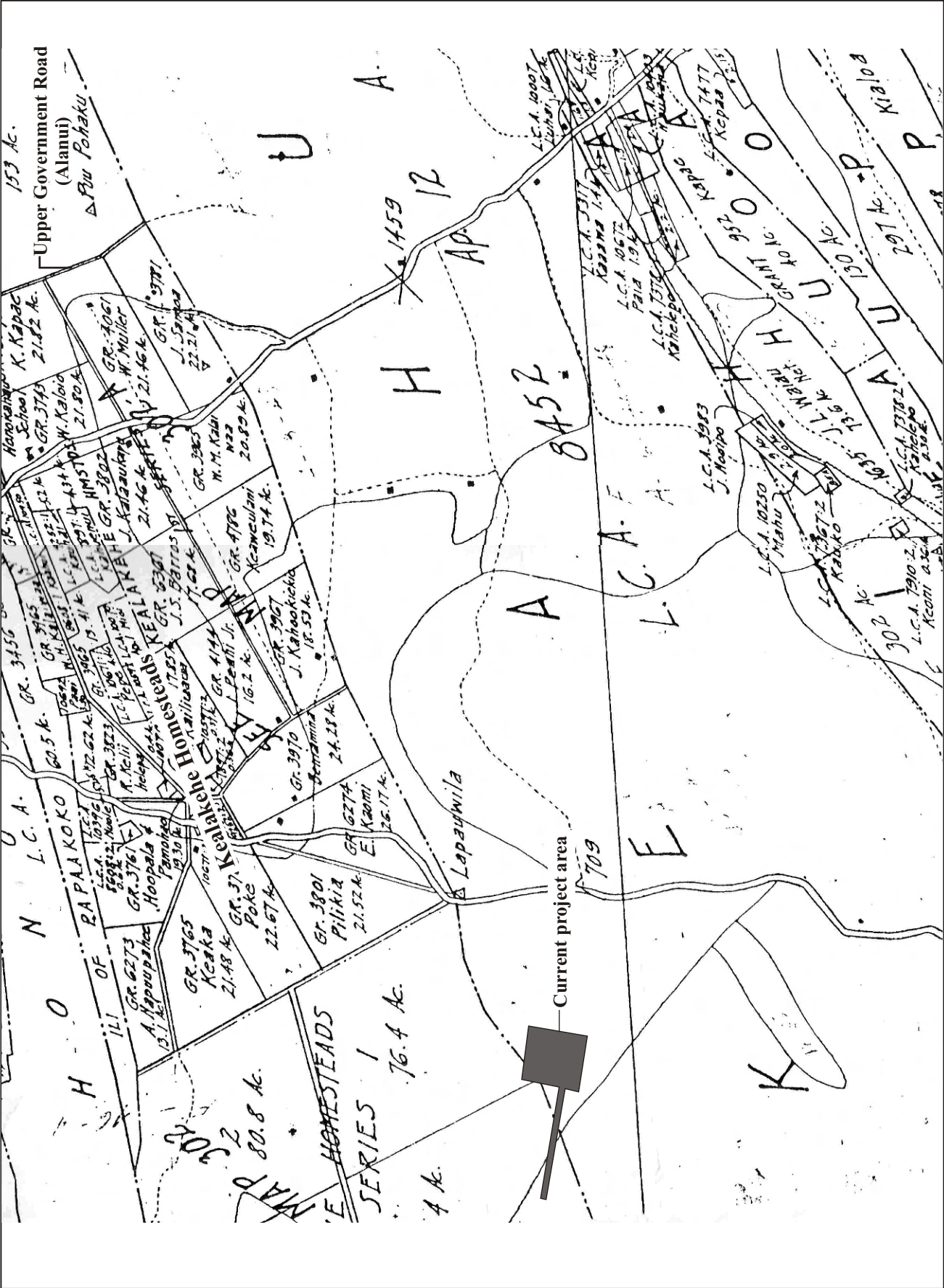


Figure 6. Portion of 1928 Strip Map.

PROJECT AREA EXPECTATIONS

Based on the background information presented above, a set of field expectations can be generated. According to the Cordy et al. (1991) settlement pattern model for Kaloko Ahupua‘a, the current project area is located within the Lower Upland Zone, which represents a transitional area between the coastal habitation zone and the upland agricultural zone. The Lower Upland Zone is characterized by informal agricultural plots marked by low-walls, terraces, modified outcrops, and mounds, temporary habitations similar to those found in the Middle Zone, and various Historic sites related to habitation, ranching, and agriculture. The findings of previous archaeological studies conducted in Kealakehe and Keahuolū Ahupua‘a at elevations similar to the current project area (c.f. Jensen and Head 1994; Rechtman et al. 2000; Rechtman and Dougherty 2002) and those occurring within the current project area (Donham 1990a, 1990b, 1990c) have generally confirmed the Cordy et al. (1991) model.

Based on this information, Precontact feature types that may be encountered within the current survey corridor include *pāhoehoe* excavations, mounds, modified outcrops, terraces, and low rock walls (*kuaiwi*) related to agricultural use of the area, enclosures, platforms, or lava tubes used for habitation purposes, and perhaps *mauka/makai* trails that connected coastal areas with inland areas. If any burials are present, they may be found within lava tubes or neatly constructed platforms. Historic feature types that may be encountered within the current survey corridor include core-filled walls used for ranching and boundary purposes, roads, habitation features (i.e. enclosures, platforms, cisterns, etc.), and possibly agricultural features similar to those described above. If any Historic Period burials are encountered they may be located in above ground mausoleums.

FIELDWORK

Fieldwork for the current inventory survey was conducted by Christopher S. Hand, B.A., Ashton K. Dircks, B.A., and Johnny R. Dudoit, B.A. on December 18-20 2007 with follow up subsurface testing on January 9 2008 by Matthew R. Clark, B.A. and Christopher S. Hand, B.A. All fieldwork was carried out under the direction of Robert B. Rechtman, Ph.D.

Methods

During the intensive inventory survey of the current project area, the entire survey corridor was subject to pedestrian transects with fieldworkers spaced at 10-meter intervals; one following the corridor centerline, which had been marked by land surveyors prior to the commencement of fieldwork, and one on either side of the centerline ten meters distant. The reservoir site location was surveyed utilizing north/south transects with fieldworkers spaced at 10-meter intervals. When archaeological features were encountered, they were plotted on a map of the study area using a combination of Garmin 76s handheld GPS technology (with sub five-meter accuracy) and tape and compass reckoning. They were then cleared of vegetation, mapped in detail, photographed (with a meter stick for scale), and described using standardized site record forms. A lava blister located in the southeast portion of the reservoir site was thoroughly investigated for cultural material and was subject to subsurface testing (Figure 7). Testing revealed a 2 to 8 centimeter thick layer of very dark grayish brown (10YR 3/2) loamy silt. The test unit was sterile and the feature was determined to be a non-cultural natural blister and was therefore not assigned a SIHP Site number.

Findings

As a result of the current inventory survey, four newly recorded sites and two previously recorded sites were identified. The previously recorded sites included an agricultural complex (SIHP Site 13220) and a boundary wall (SIHP Site 5011) (Donham 1990a). The newly recorded sites consisted of three cairns (SIHP Sites 26395, 26396, and 26397), and a multi-feature site (SIHP Site 26398). Detailed descriptions of all the recorded sites follow below, and their locations are depicted on Figure 8. During the current survey, a triangular stacked mound was observed outside of the project area, along the eastern end of the southern boundary. As this site was outside the project area, it is not detailed in the current study and was not assigned an SIHP site number. It is shown on Figure 8 to facilitate its protection during any future development activities that may occur in association with the construction of the reservoir and service road.

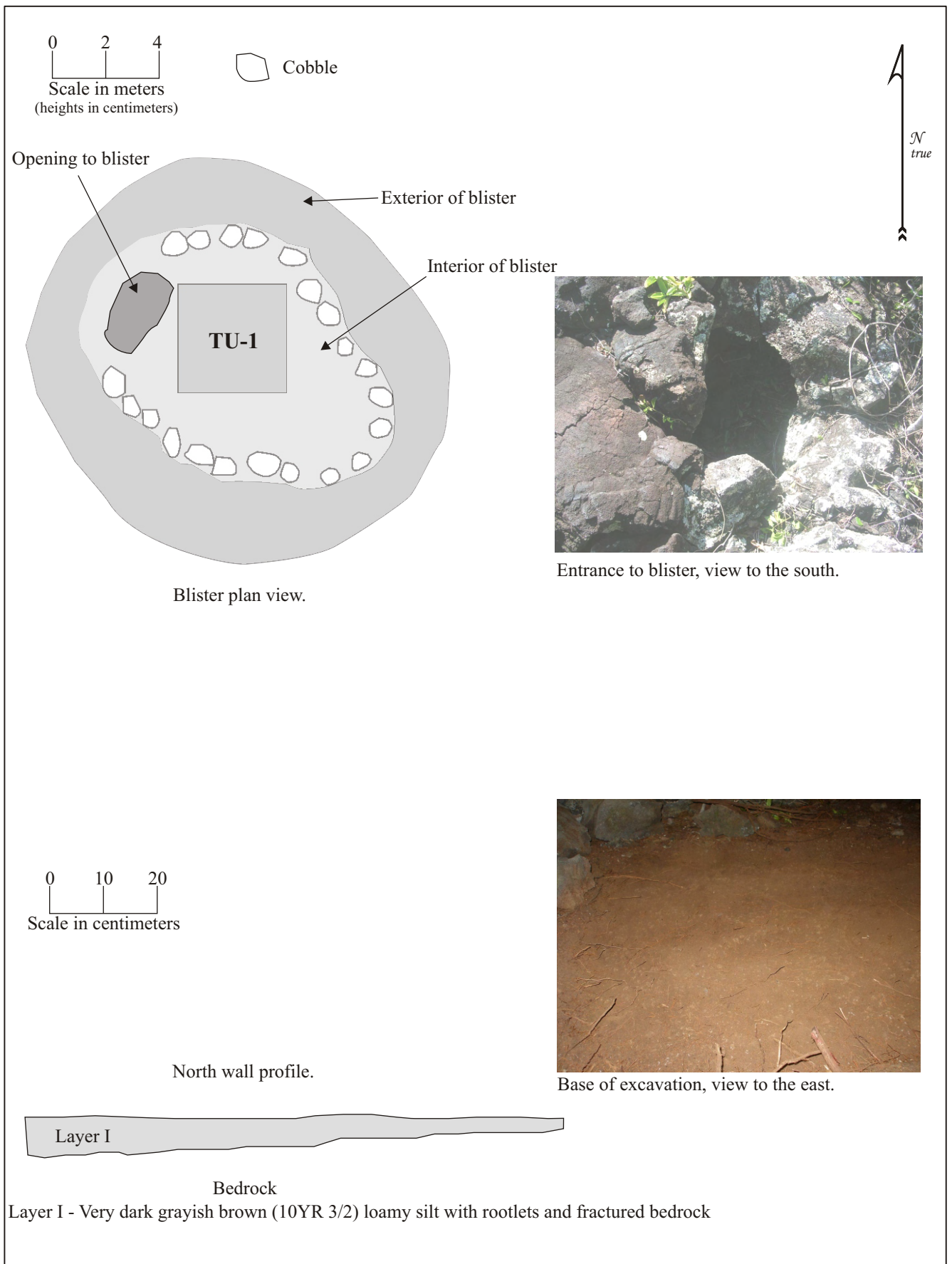


Figure 7. Lava blister plan view and testing.

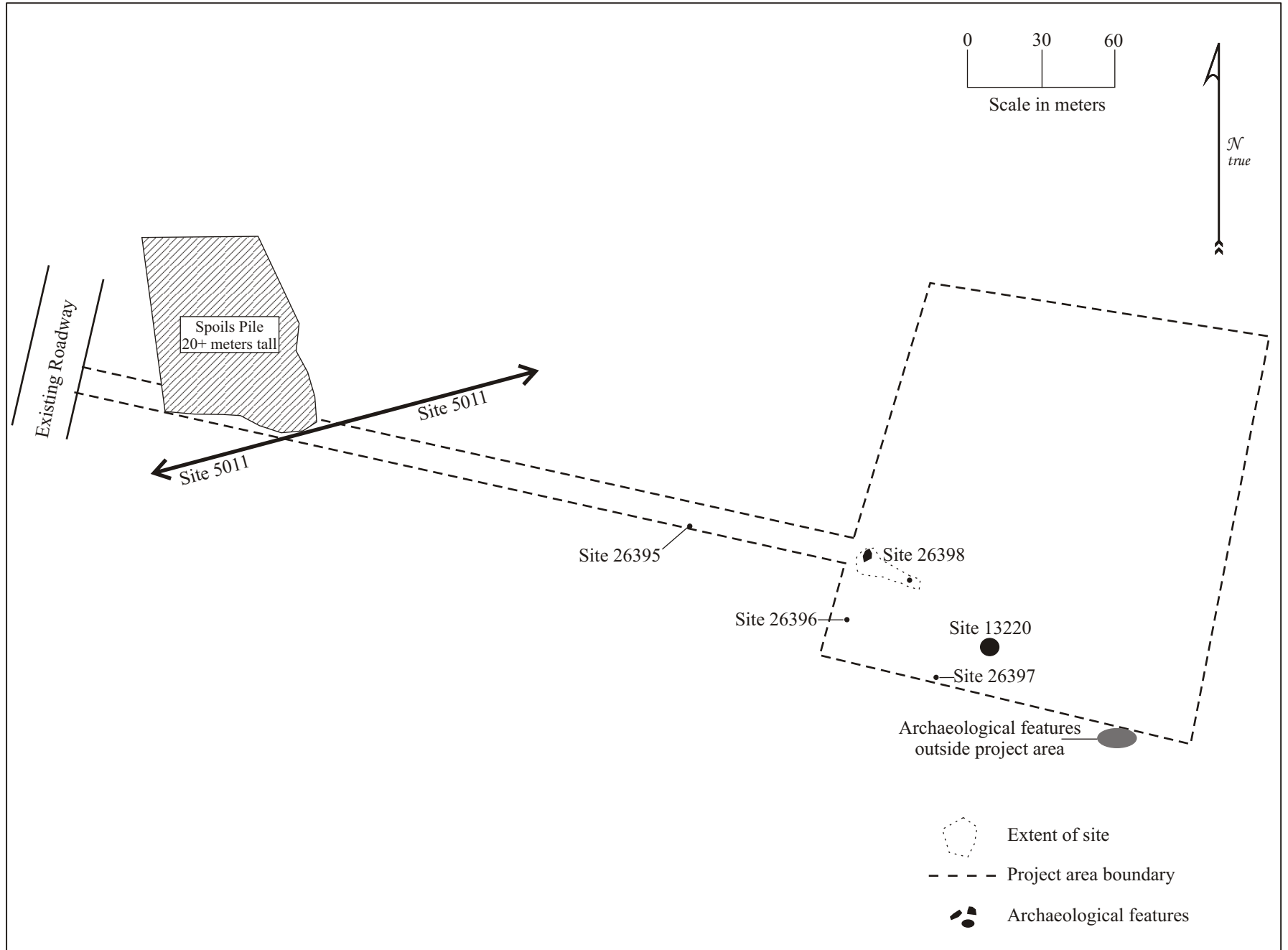


Figure 8. Project area plan view.

SIHP Site 5011

SIHP Site 5011 is a boundary wall located on the border between Kealakehe and Keahuolū *ahupua'a* (see Figure 8) and was first recorded during an inventory survey conducted by PHRI (Donham 1990a: A-52):

This wall follows the ahupuaa boundary between Kealakehe and Keahuolu. It consists of aa and pahoehoe, small to medium boulders and small to large cobbles. The wall is bifaced and core-filled. The wall is oriented an average of c. 220/40 degrees Az. And has a few bends in the eastern section. The east and west ends are currently defined by the boundaries of developed areas, and do not represent the original ends of the wall.

Within the current project area the wall crosses through the western portion of the proposed service road in a northeast/southwesterly direction and continues outside the project area on both sides (see Figure 8). It is constructed of small to large 'a'a and pāhoehoe cobbles and measures 60 to 70 centimeters wide. The wall is core-filled and stacked up to 120 centimeters in height (Figure 9). Portions of the wall have collapsed. This wall was likely built during the Historic Period for cattle control.



Figure 9. SIHP Site 5011, view to the south.

SIHP Site 13220

SIHP Site 13220 is an agricultural complex consisting of two features located in the south-central portion of the proposed reservoir area location (see Figure 8). SIHP Site 13220 was first recorded by Donham (1990a) and was then was relocated during the current study. Donham (1990a: A-28 and 30) recorded the site as follows:

Description: A linear rock mound (Feature A), a pahoehoe excavation (Feature B), and a circular rock mound (Feature C) were identified within an area c. 12.20m by 10.0m at this site. No portable remains or deposits were noted.

This site was interpreted by PHRI as an agricultural complex dating to either the Precontact Period or the early Historic Period (Donham 1990a). During the current study only Features A and B could be located. A PHRI site tag reading “T-55 89-652 9-2-89” was observed on Feature A. As recorded during the current study, Feature A is a northeast/southwest extending linear alignment constructed of loosely stacked small and medium *pāhoehoe* cobbles (Figure 10). It measures 5.2 meters by 1.1 meters and is 60 centimeters in height (Figure 11).

Feature B is located 3 meters northeast of Feature A (see Figure 11). As recorded during the current study, Feature B is a square-shaped pile of small and medium *pāhoehoe* cobbles measuring 3.5 meters by 2.8 meters and is 40 centimeters in height (Figure 12). PHRI described this feature as a *pāhoehoe* excavation. During the current study an excavated area measuring approximately 1.7 meters by 0.9 meters was observed on the surface of Feature B, roughly in the center of the feature (see Figure 11). The excavated area measures 65 centimeters deep from the surface of the feature.



Figure 10. SIHP Site 13220 Feature A, view to the northeast.

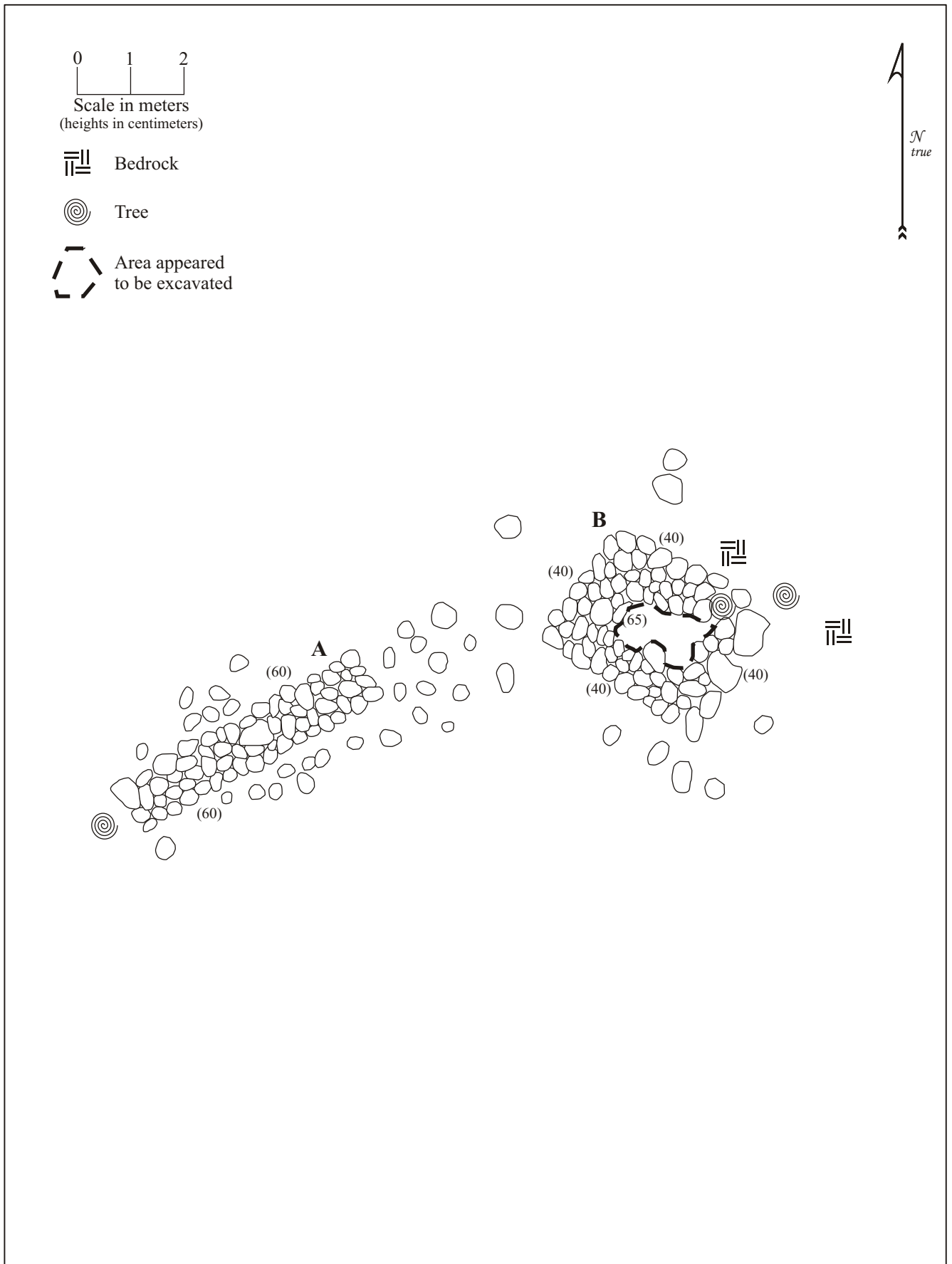


Figure 11. SIHP Site 13220 plan view.



Figure 12. SIHP Site 13220 Feature B, view to the northwest.

SIHP Site 26395

SIHP Site 26395 is a cairn located in the eastern third of the proposed service road corridor (see Figure 8). It is constructed of medium 'a'ā cobbles and measures 30 centimeters in width and is piled up to 70 centimeters in height (Figure 13).



Figure 13. SIHP Site 26395, view to the east.

SIHP Site 26396

SIHP Site 26396 is a cairn located in the southwestern corner of the proposed reservoir location (see Figure 8). It is constructed of one large boulder on the ground surface and medium and large cobbles piled on top. The cairn measures 70 centimeters wide and has a height of 50 centimeters (Figure 14).



Figure 14. SIHP Site 26396, view to the west.

SIHP Site 26397

SIHP Site 26397 is a cairn located approximately 42 meters southeast of SIHP Site 26396, along the southern boundary of the proposed reservoir location (see Figure 8). The cairn is constructed of stacked and piled medium and large *pāhoehoe* cobbles up to 60 centimeters in height and was built on top of a *pāhoehoe* outcrop (Figure 15). The base of the cairn measures 70 centimeters in diameter and tapers up to 40 centimeters at the top.



Figure 15. SIHP Site 26397, view to the west.

SIHP Site 26398

SIHP Site 26398 consists of two features; a linear rock mound (Feature A) and a *pāhoehoe* excavation (Feature B) located in the southeastern portion of the proposed reservoir location, near the proposed service road (see Figure 8). Feature A is a linear mound constructed of loosely piled small and medium slab-like *pāhoehoe* cobbles and measures roughly 4.5 meters by 2.2 meters with heights ranging from 20 to 60 centimeters (Figure 16). Small cavities were observed along the edges of Feature A in which soil had accumulated. The west-central surface appears to have a 1.6 meter by 0.8 meter excavated area. There are cobbles piled around the excavated area exhibiting the same weathering coloration and deterioration as the surrounding feature cobbles, suggesting that this excavation is recent (Figure 17).

Feature B is a 40 centimeter deep *pāhoehoe* excavation located approximately 18 meters southeast of Feature A. Feature B measures 70 centimeters by 70 centimeters and consists of small to large *pāhoehoe* cobbles that have been removed from between a *pāhoehoe* outcrop and bedrock (Figure 18). These two features are very similar in type and style to Features A and B of Site 13220 (Donham 1990a).

Summary

As a result of the current inventory survey, four newly recorded sites and two previously recorded sites were identified. The previously recorded sites consisted of an agricultural complex (SIHP Site 13220) and a boundary wall (SIHP Site 5011) (Donham 1990a). The newly recorded sites consisted of three cairns (SIHP Sites 26395, 26396, and 26397), and a multi-feature site (SIHP Site 26398). All of the sites with the exception of Site 5011 appear to have been constructed and/or utilized during the Precontact Period. SIHP Site 5011 is a core-filled boundary wall and because of its construction method was likely built during the Historic Period.

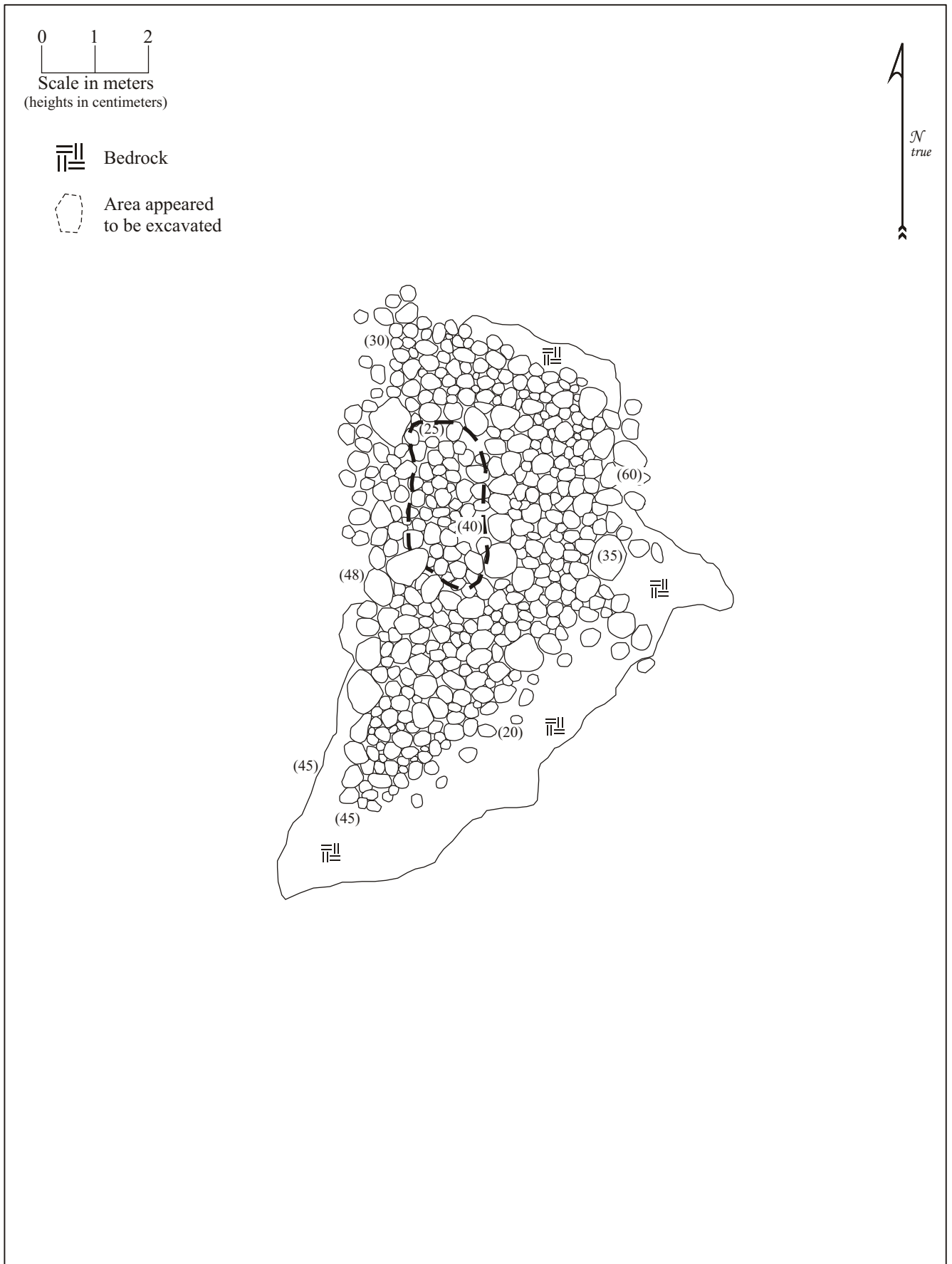


Figure 16. SIHP Site 26398 Feature A plan view.



Figure 17. SIHP Site 26398 showing excavated area, view to the northeast.



Figure 18. Overview of area located southeast from Site 26398 that appeared excavated.

SIGNIFICANCE EVALUATION AND TREATMENT RECOMMENDATIONS

The sites recorded during the current study are assessed for their significance based on criteria established and promoted by the DLNR-SHPD and contained in the Hawai‘i Administrative Rules 13§13-284-6. These significance evaluations should be considered as preliminary until DLNR-SHPD provides concurrence. For resources to be considered significant they must possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet one or more of the following criteria:

- A Be associated with events that have made an important contribution to the broad patterns of our history;
- B Be associated with the lives of persons important in our past;
- C Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
- D Have yielded, or is likely to yield, information important for research on prehistory or history;
- E Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity.

The significance and recommended treatments for the four sites are discussed below and are presented in Table 2.

Table 2. Site significance and treatment recommendations.

<i>Site No.</i>	<i>Site Type</i>	<i>Temporal Affiliation</i>	<i>Significance</i>	<i>Treatment</i>
5011*	Boundary wall	Historic	D	No further work
13220*	Agricultural complex	Precontact	D	No further work
26395	Cairn	Precontact	D	No further work
26396	Cairn	Precontact	D	No further work
26397	Cairn	Precontact	D	No further work
26398	Cairn	Precontact	D	No further work

*While these sites have been previously subject to evaluation and recommendation, the current study provides a re-evaluation relative to the current project area.

Sites 5011, 13220, 26395, 26396, 26397, and 26398 are all considered significant under Criterion D for information they have yielded relative to past use of the current project area. It is argued that the information collected during the previous and current inventory surveys is sufficient to document these sites and to mitigate any potential negative impacts resulting from the proposed development of the reservoir and service road. Therefore, no further work is recommended for these sites. It is further recommended that an archaeological monitor be present during the initial grubbing and grading associated with this project in an effort to insure the protection of a nearby archaeological features observed during the current survey of the project area (see Figure 8). A monitoring plan for the proposed development area should be prepared and submitted to DLNR-SHPD prior to any groundbreaking activities.

REFERENCES CITED

- Bevacqua, R.
1972 Letter Report. Archaeological Reconnaissance Survey of a Portion of Keahuolu, Kona, Hawaii Island. Department of Anthropology, B.P. Bishop Museum, Honolulu.
- Borthwick, D., T. Barr, and H. Hammatt
1993 Archaeological Planning Reconnaissance for the Proposed Kealakehe Parkway Extension. Cultural Surveys Hawaii. Honolulu.
- Borthwick, D. and H. Hammatt
1992 Archaeological Assessment for the Proposed Kealakehe Sewer Force Main and Waste Water Pumping Station, Kealakehe, Keahuola, North Kona, Hawaii Island, Hawaii, TMK 7-5-04:67, 7-5-05:07, 7-4-08:02. Prepared for R.M. Towill Corporation.
- Burgett, B., and P. Rosendahl
1992 Archaeological Inventory Survey, Kealakehe Planned Community Project Area, Lands of Kealakehe and Keahuolu, North Kona District, Island of Hawaii (TMK:7-04-08:17, Por.12). PHRI Addendum Report 927-021192. Prepared for Housing Finance and Development Corporation.
- Burtchard, G.
1995 Population and Land Use on the Keauhou Coast, the Mauka Land Inventory Survey, Keauhou, North Kona, Hawai'i Island. Part I: Narrative Volume. International Archaeological Research Institute, Inc. Prepared for Belt, Collins and Associates and Kamehameha Investment Corporation, Honolulu.
- Ching, F., Jr.
1978 Archaeological Reconnaissance of Liliuokalani Trust Lands, Keahuolu, Kona, Hawaii. Report 14-1391. Archaeological Research Center Hawaii, Inc. Prepared for Belt, Collins and Associates.
- Chinen, J.
1961 *Original Land Titles in Hawaii*. Honolulu: privately published.
- Clark, M., A. Ketner, and R. Rechtman
2008 An Archaeological Inventory Survey for the Proposed Development of Keahuolū Well Site No. 2 on Queen Liliuokalani Trust Lands (TMK:3-7-4-02:06 por.), Keahuolū Ahupua'a, North Kona District, Island of Hawai'i. Rechtman Consulting Report RC-0492. Prepared for Greg Fukumitsu, Tom Nance Water Resource Engineering, Honolulu, Hawai'i.
- Clark, M., and R. Rechtman -2005
2005 An Archaeological Inventory Survey of Alternative 3 of the Palani Road Transmission Main Water Supply Route (TMKs:3-7-4-04:1 por., 3-7-4-08:1 por., and 3-7-4-09:72 por.), Kealakehe and Keahuolū *ahupua'a*, North Kona District, Island of Hawai'i. Rechtman Consulting Report RC-0314. Prepared for Geometrician Associates, LLC.
- Cluff, D
1971 An Archaeological Survey of the Seaward Portion of Honokōhau #2 and #2, North Kona, Hawaii Island. Report 69-5, Dept. of Anthropology, B. P. Bishop Museum.

- Conter, Frank E.
1903 The Cultivation of Sisal in Hawaii. *Hawaii Agricultural Experiment Station*, Bulletin No. 4. Honolulu.
- Cordy, R.
1981 *A Study of Prehistoric Social Change: The Development of Complex Societies in the Hawaiian Islands*. New York: Academic Press.
- 1995 Central Kona Archaeological Settlement Patterns. State Historic Preservation Division, Department of Land and Natural Resources, State of Hawaii.
- Cordy, R., J. Tainter, R. Renger, and R. Hitchcock
1991 An Ahupua'a Study: The 1971 Archaeological Work at Kaloko Ahupua'a, North Kona, Island of Hawai'i. *U.S. Department of the Interior, Western Archaeological and Conservation Center Publications in Anthropology* 58.
- Donham, T.
1990a Archaeological Inventory Survey, Kealakehe Planned Community Project Area, Lands of Kealakehe and Keahuolu, North Kona District, Island of Hawaii. PHRI Report 652-010890. Prepared for State of Hawaii.
- 1990b Archaeological Inventory Survey, Queen Liliuokalani Trust Property, Land of Keahuolu, North Kona District, Island of Hawaii (TMK:3-7-4-8:Por.2,12). PHRI Report 596-021290. Prepared for Belt, Collins and Associates.
- 1990c Archaeological Inventory Survey, Kealakehe Planned Community Project Area, Lands of Kealakehe and Keahuolu, North Kona District, Island of Hawaii (TMK:7-04-08:17,Por.12). PHRI Addendum Report 652-051090. Prepared for Housing Finance and Development Corporation—State of Hawaii.
- Ellis, W.
1963 *Journal of William Ellis, Narrative of a Tour of Hawaii, or Owhyee...* Honolulu: Advertiser Publishing Co., Ltd. (original 1823)
- Emory, K., and L. Soehren
1971 Archaeological and Historical Survey, Honokohau Area, North Kona, Hawaii. *Departmental Report Series* 61-1. Department of Anthropology, B.P. Bishop Museum, Honolulu. Prepared for Department of Land and Natural Resources, State of Hawaii.
- Hammatt, H., and W. Folk
1984 Archaeological Reconnaissance for Kealakehe Houselots II Project, Kealakehe, North Kona, Hawaii. TMK 7-4-08:17. Prepared for Gerald Park, Urban Planner, Honolulu.
- Hammatt, H., D. Shideler, and D. Borthwick
1987 Archaeological Survey and Test Excavations of a 15-Acre Parcel, Kealakehe, Kona, Hawaii (TMK 7-4-17:30). *Cultural Surveys Hawaii*. Prepared for Mauna Lani Resort, Inc.
- Handy, E. S. C., and E. G. Handy
1972 Native Planters in Old Hawai'i. *B.P. Bishop Museum Bulletin* 233. Bishop Museum Press, Honolulu. (With M.K. Pukui)

- Haun, A. and D. Henry
2001 Archaeological Inventory Survey Department of Hawaiian Homelands Commercial/Industrial Development Land of Kealakehe, North Kona District, Island of Hawai'i (TMK: 7-4-08: [por. 3]). Prepared for PBR Hawaii.
- Haun, A., J. Henry, J. Jimenez, M. Kirkendall, K. Maly, and T. Wolforth
1998 Ali'i Highway Phased Mitigation Program Phase I – Archaeological Intensive Survey, North Kona District, Island of Hawai'i, Vol. 1, Summary. PHRI Report 1320-052798. Submitted to County of Hawai'i.
- Hommon, R.
1986 Social Evolution in Ancient Hawai'i. IN Kirch, P.V. (ed.), *Island Societies: Archaeological Approaches to Evolution and Transformation*: 55-88. Cambridge: University Press.
- Jensen, P.
1990 Archaeological Inventory Survey, Palani Road Improvements Project, Land of Keahuolu, North Kona District, Island of Hawaii. PHRI Report 771-060690. Prepared for Department of Public Works, County of Hawaii.
- Jensen, P., and J. Head
1994 Archaeological Inventory Survey, Queen Liliuokalani Trust, Keahuolu Reservoir Site. Land of Keahuolu, North Kona District, Island of Hawai'i. Paul H. Rosendahl, Ph.D., Inc., Report 1517-093094. Prepared for Belt Collins Hawaii, Honolulu, Hawaii.
- Kelly, M.
1983 *Na Mala O Kona: Gardens of Kona. A History of Land Use in Kona, Hawai'i. Departmental Report Series 83-2.* Department of Anthropology, B.P. Bishop Museum, Honolulu. Prepared for the Department of Transportation, State of Hawaii.
- Kirch, P.
1985 *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory.* Honolulu: University of Hawaii Press.
- Ladd, E.
1968 Honokohau, Hawaii. A Salvage Report. Manuscript. Department of Anthropology, B.P. Bishop Museum, Honolulu.
- Newman, T.
1970 Hawaiian Fishing and Farming on the Island of Hawaii in A.D. 1778, Division of State Parks, Department of Land and Natural Resources, Honolulu.
- O'Hare, C. and S. Goodfellow
1994 Phased Archaeological Mitigation Program, Kealakehe Planned Community Phase II: Archaeological Data Recovery, Land of Kealakehe, North Kona District, Island of Hawaii. PHRI Report 1201-040794. Prepared for Housing Finance and Development Corporation, Department of Budget and Finance, State of Hawaii.
- Rechtman, R., and D. Dougherty
2002 Archaeological Inventory Survey of TMK:3-7-4-03:5, Kealakehe Ahupua'a, North Kona District, Island of Hawai'i. Report RC-0093. Prepared for Sarah Crawford, Hōlualoa, Hawai'i.

- Rechtman R., D. Dougherty, and M. Clark
2000 An Archaeological Inventory Survey of TMK:3-7-4-03:7, Kealakehe Ahupua'a, North Kona District, Island of Hawai'i. Rechtman Consulting Report RC-0017. Prepared for John Matucha, Kailua-Kona.
- Rechtman, R., and G. Escott
2002 Archaeological Inventory Survey for Additions to the Kealakehe Wastewater Treatment Plant (TMK: 3-7-4-08:Por. 3), Kealakehe Ahupua'a, North Kona District, Island of Hawai'i. Rechtman Consulting Report RC-0113. Prepared for Wastewater Division, Department of Environmental Management, Hilo, Hawai'i.
- Rechtman, R., and J. Henry
1998 Archaeological Inventory Survey Morrison Property (TMK:3-7-3-08:17), Kaloko Ahupua'a, North Kona District, Island of Hawai'i. PHRI Report 1911-111198. Prepared for Carl Morrison, Bellevue, Washington.
- Reinecke, J.
1930 Survey of West Hawaiian Sites: From Kailua, Kona, to Kalahuipuaa, Kohala. Manuscript. Department of Anthropology, B.P. Bishop Museum, Honolulu.
- Rosendahl, P.
1983 Archaeological Survey of Certain Liliuokalani Trust Properties. IN Proposed Development Plan and Environmental Assessment for Kona Industrial Subdivision Expansion. Prepared for Belt, Collins and Associates.
- 1993 1993 Archaeological Field Inspection, Queen Liliuokalani Trust—Keahuolu Well Site, Land of Keahuolu, North Kona District, Island of Hawaii. PHRI Letter Report 1392-051493. Prepared for Belt, Collins & Associates.
- Sato, H., W. Ikeda, R. Paeth, R. Smythe, and M. Takehiro, Jr.
1973 *Soil Survey of the Island of Hawaii, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service and University of Hawaii Agricultural Experiment Station. Washington, D.C.: Government Printing Office.
- Schilt, R.
1984 Subsistence and Conflict in Kona, Hawaii. An Archaeological Study of the Kuakini Highway Realignment Corridor. Departmental Report Series 84-1. Department of Anthropology, B.P. Bishop Museum, Honolulu. Prepared for the Department of Transportation, State of Hawaii.
- Sekido, L.
1968 Archaeological Excavation of a Shelter Cave: Kealakehe D11-1A. Manuscript. Department of Anthropology, University of Hawaii-Hilo.
- Sinoto, A.
1975 Report on the Archaeological Reconnaissance Survey of the Honokohau Small Boat Harbor Expansion Area, Kealakehe, Kona, Hawaii Island. Manuscript 042875. Department of Anthropology, B.P. Bishop Museum, Honolulu.

- Soehren, L.
1980 Letter report of Archaeological Reconnaissance Survey of the proposed Kailua Wastewater Treatment Plant, Kealakehe (TMK:7-4-08: Por. 3). Prepared for R. M. Towill Corp.
- 1983 Letter Report. A Ten-Acre Parcel on a Proposed Addition to Liliuokalani Village, Keahuolu, North Kona, Hawaii. Prepared for Affordable Homes on Hawaii.
- Soehren, L., and T. Newman
1968 Archaeology of Kealakekua Bay. Department of Anthropology, B.P. Bishop Museum, Honolulu, and University of Hawaii-Manoa.
- Stokes, J.
1919 Survey of Heiaus of Hawaii. Manuscript. Department of Anthropology, B.P. Bishop Museum, Honolulu.
- Stokes, J. and T. Dye (ed.)
1991 *Heiau of the Island of Hawaii: A Historic Survey of Native Hawaiian Temple Sites*. Bishop Museum Press: Honolulu.
- Thrum, T.
1905 Retrospect for 1905. *Thrum's Hawaiian Annual for the Year 1906*: 175-195.
- Walker, A., and A. Haun
1987 Archaeological Reconnaissance Survey, Proposed Kealakehe Reservoir Site. PHRI Report 350-093087. Prepared for County of Hawaii, Department of Water Supply.
- Walsh, P., and H. Hammatt
1995 An Archaeological Inventory Survey of the New Queen Kaahumanu Highway Right-Of-Way Between Palani Road and Keahole Airport, Within the *Ahupua'a* of Keahuolu, Kealakehe, Honokohau, Kaloko, Kohanaiki, O'oma 2, Kalaoa-O'oma, and Kalaoa 1-4, Kekaha, North Kona District, Island of Hawai'i. Prepared for R.M. Towill Corporation by Cultural Surveys Hawaii.
- Wilkes, C.
1845 Narrative of the United States Exploring Expedition During the Years 1838-1842, Under the Command of C. Wilkes, U.S.N., Volume 4. Philadelphia: Loa and Blanchard.
- Wolfe, E., and J. Morris
1996 Geologic Map of the Island of Hawai'i. Geologic Investigations Series Map 1-2524-A. U.S. Department of the Interior, U.S. Geological Survey.

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